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AZERBAIJAN COMPETITIVENESS AND TRADE (ACT) PROJECT

Dairy Sector Assessment

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Acronyms

ACT	Azerbaijan Competitiveness and Trade Project
AI	Artificial Insemination
AZN	New Azeri Manat
AIM	Agro Information Center
BDS	Business Development Service
CP	Crude Protein
DMI	Dry Matter Intake
FAO	Food and Agricultural Organization of the United Nations
GDP	Gross Domestic Product
GoA	Government of Azerbaijan
GiZ	German International Cooperation
JAC	Janub Agribusiness Center
LN	Liquid Nitrogen
LRI	Livestock Research Institute
MCC	Milk Collection Center
MCP	Milk Collection Point
ME	Milk Equivalent
MoA	Ministry of Agriculture
MT	Metric Ton
NGO	Non-Governmental Organization
SSC	State Statistical Committee
SVS	State Veterinary Service
UMID	Humanitarian and Social Support Center
USAID	United States Agency for International Development
USD	United States Dollar
VAT	Value Added Tax
WB	World Bank

Executive Summary

In Azerbaijan, dairy products are traditionally an important part of the diet and widely used as ingredients in Azeri dishes. Azerbaijan differs from other countries, in that liquid milk is not consumed much by itself but used to make a variety of dairy products. The tradition of home processing goes back for centuries, but industrial processing is fairly new.

Azerbaijan produces 80-85% of its total milk and dairy consumption, while the remaining 15-20% is imported from various countries, such as CIS-countries, Turkey, Germany and the Netherlands. The imported products are mainly sold in shops and supermarkets to consumers with a higher disposable income; especially in Baku. It is this market share with which the local dairy industry has to compete. Thus the focus of the dairy industry will be mainly on import substitution, rather than looking for export markets.

Azerbaijan has a very large number of households that keep cows, but very few professional dairy farmers. The average household has less than 5 cows, which are kept under extensive systems and produce an average of less than 1,500 liter/cow/year. At present only 10% or even less of all raw milk is collected and processed by the formal dairy industry. All other milk is either consumed at home, used for home processing, sold to traders and informal processors or fed to the calves. Surplus milk is sold to the dairies.

The Government of Azerbaijan has declared agriculture as one of its priority areas for development, and therefore wants to stimulate investments in the sector. This is clearly visible in the dairy sector as currently there are at least five modern dairy plants are under construction and several others are already in operation. In many countries the processing industry is the engine for development and in Azerbaijan this will also be the case. The dairy plants provide an outlet for raw milk and thus create a market; not only for the farmers that supply the milk, but also for the input suppliers and services that are needed to develop the sector.

In order to produce high quality dairy products, not only modern and well managed processing facilities are required, but also sufficient raw milk of an acceptable quality, preferably meeting international standards. This is one of the main challenges for the new dairy plants. There is a strong seasonality in milk production. In spring, when most calves are born and fresh fodder is available there is an abundance of milk and more than the dairies need. In winter many cows are dry (lactation periods are 6-7 months for the local breeds) and milk yields are low. There is a shortage of supply, resulting in raw milk prices that are 50-60% higher than in summer.

The dairy plants need a regular supply of raw milk throughout the year. This can only be achieved if farmers improve the genetic quality of the cows, calves are born throughout the

year and nutrition and management are improved. Farmers will have to invest in the production and conservation of a higher quality fodder and feed additional concentrates according to animal requirements.

With the new investments in dairy processing and the increasing demand for raw milk, there is a serious risk that competition will lead to higher milk prices without substantial improvement of milk quality. Farmers will sell to the dairy with the lowest quality demand and the highest price. This can be avoided if the major processors agree on quality standards, provide prices based on quality and milk collection areas. This is necessary for investments in production and quality improvement.

At present milk collectors go around the villages to collect the milk at the farm gate. Here quality testing is limited to the basic control of added water and appearance. At the milk collection centers (MCCs) additional testing can be carried out and if the basic standards are not met, milk will be rejected. However, this milk has already been collected from the farmer and has to be paid for. The loss is for the collector. The dairy plant in its turn checks the quality at the MCC and may reject part of the milk as well. In winter hardly any milk will be rejected at any level, in summer 3-5% may have to be refused.

In practice farmers all receive a similar price for their milk, as the collector divides the payment over his suppliers. With more fat in the milk, they all receive a little more and with less fat the price goes down. For the individual farmer there is little incentive to supply the highest quality. The milk collector is the one who takes the risk, and he has to make sure that all milk at least has the minimum standard for acceptance. At this stage we do not even mention the introduction of payment systems based on total composition (fat and protein of fat and solids non-fat) and biological quality (total bacteria count, somatic cell count or antibiotics). Achieving the basic quality standards will be difficult enough.

Each dairy will not only have to develop its milk collection system (which under the present conditions is expensive and adds substantially to the raw milk price), but should also find a way to support those farmers that are willing to invest in higher yields and better quality. Without better breeds, milk production can only increase marginally. Importing pedigree cows should only be done for farms that are able to manage such animals. These are very few. Artificial insemination – using tested sires – allows for a gradual improvement in genetic potential, while at the same time farm management and nutrition can be improved.

The private sector already plays an important role in the provision of AI services, mainly based on imported semen (high quality for a fair price). Recently the government opened its own bull station with 21 sires and a semen production capacity that is many times higher than the present demand. The training of inseminators has not (yet) been standardized and/or certified,

which leads to complaints by farmers that the quality of the services is not high enough. Here the government could contribute effectively by organizing professional courses and only allow certified inseminators to work in the field.

The present prices for compound feed are substantially higher than the raw milk price (raw milk is 0.25 – 0.35 AZN/kg in winter, while compound feed is 0.50 AZN/kg). At that price it is not economical to feed any concentrate. Wheat bran (at 0.20 AZN/kg) is the only feed ingredient that is affordable. Through the dairy plants, feed supply could be organized more efficiently and probably at lower cost. This option needs to be discussed with the feed mills operating in Azerbaijan. Farmers will also have to pay more attention to forage quality: the use of good alfalfa seeds and fertilizer, harvesting at the right time and careful conservation and storage. For larger farms the production of corn silage could be an option.

The dairy plants will have to use their full production capacity if they want to reduce processing costs and be able to compete successfully on the dairy market. They can only do this if there is sufficient raw milk of acceptable quality at a realistic price. A price that allows farmers to invest in better cows, higher yields and expansion of farming scales. This means that dairy plants have to support dairy development.

The government plays an important role as facilitator and in creating the environment in which the private sector can develop. Food security and quality control are important aspects, but also stimulation of on-farm investments through incentives will be necessary.

Donor organizations have been active in the dairy sector for quite a number of years. At present USAID has several programs to support the dairy sector at various levels. An important one will be to assist the key-players to develop the roadmap towards a more professional system of milk production. This will then lead to improved quality standards and higher milk yields and allow the dairy processing industry to compete successfully with the international suppliers in the Azeri market.

Dairy development is a process that will take time and effort. It will take years to change the production systems and to reach international quality standards. However, if the objectives and approach are clear, visible improvements can be made with each step forward. Azerbaijan has great potential to develop the dairy sector, and with commitment from all key players, this potential can be realized.

1. Introduction

The ACT project is focused on expanding business development and creating buoyant employment opportunities in high potential value chains. One major pre-selected area of

support under the program is the dairy value chain with its significant potential for expansion of production and domestic sales of value-added dairy products. Under the prior PSCEP Program, USAID largely focused on technical training and support to promote productivity and milk quality enhancement, development of milk collection structures and tightened market linkages with major milk processing companies (e.g., Pal-Sud, M-Pro and B-Agro).

The core goal of ACT in the dairy sector will be to build on and significantly expand this initial progress. ACT will strategically target technology transfer, best practices compliance and related institutional strengthening as well as provide support to market integration. This will be done in a manner which will create a robust expansion of private investment, sales and employment growth in potential subsectors of the dairy industry, while at the same time significantly enhance BDS capacity to provide effective and sustainable business support services to sector participants.

The objective of the present study, which took place in February/March 2011, was to make an in-depth analysis of the dairy value chain and to identify opportunities and constraints within the dairy sector which then could be addressed through targeted project intervention.

Meetings were arranged with the Ministry of Agriculture, dairy processing companies, service- and input suppliers. Valuable information and reports were received that formed the basis for an understanding of the conditions and opportunities to develop milk production and processing. Subsequently visits were paid to the Central and Southern Regions to discuss dairy development with field staff, milk collectors and farmers. The milk collection centers (MCCs), collection points (CPs) and villages that were visited provided very useful information of the general conditions and the needs for structural dairy development.

A typical farm in Azerbaijan: a few cows, some sheep and much manual labor needed to manage it all.



The next pages describe the present conditions for dairy production and assess the options for sustainable development. Livestock production is an important economic activity and with the recent investments in processing capacity, it can be expected that developments in the dairy

sector will speed up and offer all kinds of opportunities for farmers and service and input suppliers. Based on the findings, recommendations were formulated to enhance the competitiveness of the sector/value chain and to create awareness and interest amongst private sector, public sector and donor communities.

An action plan was formulated as part of the study. The proposed approach is to mobilize the processing industry as the engine for dairy development. Through them trade barriers can be addressed, quality standards can be developed and technical support can be provided to milk suppliers. Business Development Services (BDSs) can play a supportive role, but will need guidance to ensure that their technical knowledge and skills are of practical value for farm development.

2. Milk Production

2.1 Introduction

Until the mid-nineties farming in Azerbaijan was dominated by state and collective farms. Since then the majority of collective and state dairy farms were privatized, which meant that the land and cattle were divided among the workers. Organized, large-scale farming came to an end, to be replaced by a large number of family farms, households and officially registered private farms.

Table 2.1: Number of registered farms in Azerbaijan

Year	Total Farms	Collective Farms	State Farms	Private Farms	Other 'State' Farms
1990	3014	983	820	-	1211
1995	2487	1119	688	315	365
2000	2910	2	-	2500	408
2005	2506	2	-	2201	303
2009	2409	2	-	2158	249

Source: The State Statistical Committee of Azerbaijan

Rural households have between 1 and 5 cows on small plots of land. Lack of equipment, farm machinery and resources forced farmers to work with a low input-low output system. Natural grazing, supplemented with crop residues, sometimes with alfalfa and small quantities of simple concentrates (e.g., wheat bran) are the main sources of feeding.

Many farms are inefficient and milking conditions are unsanitary. Government statistics show that the average cost of production was 25.1 AZN per litre of milk in 2009. This would be higher than the prices received during summer when most milk is produced and less during the winter months when demand is higher than supply.

The cattle population, including buffaloes, has shown a steady increase during the past few years, but average yields per cow have hardly changed. This would be caused by the natural herd growth, while farming systems and input levels have remained more or less the same.

Table 2.2: Cattle population and milk production in Azerbaijan

Year	Total herd (‘000 heads *)	Adult cows (‘000 heads *)	Total yield (000 t/year)	Average yield (Lt/cow/year)
1990	1831.6	710.7	970.4	1365
1995	1681.7	722.5	826.5	1143
2000	1961.4	925.8	1031.1	1114
2005	2315.8	1117.0	1251.9	1121
2009	2569.6	1242.0	1433.1	1154

Source: The State Statistical Committee of Azerbaijan * Including cows and buffaloes

If we look at the share of the large-scale farms in the total milk production, we clearly see the enormous change that has taken place. Large-scale farms produce less than 1% of the milk. According to sources at the Ministry of Agriculture there are no more than 12 farms left in Azerbaijan with more than 200 cows, while only 247 farms count more than 50 cows.

Item	Quantity (‘000 t)
Total milk production in 2009	1433.1
Of which produced by:	
Registered enterprises	14.3
Private farms and households	1418.8
Coming from:	
Cows and buffaloes	1391.8
Sheep and goats	27.0

Source: State Statistical Committee of Azerbaijan

On average 87% of all milk is cow milk, while buffalo milk accounts for 11% and sheep and goat milk is less than 2%. Detailed production figures and cattle numbers are given in Appendix 3.

We can conclude that dairy farming in Azerbaijan is based on a low input – low output system, mainly because the scale of farming is very small and the basic infrastructure for dairy development is missing (e.g., market outlets, affordable inputs and support services).

2.2 Cattle Breeds and Breeding

Azerbaijan knows a number of local cattle breeds and buffaloes:

- The dominant breed in Azerbaijan is the Caucasian Brown. This breed was developed in the period 1930 –1960 by crossing the local Caucasian breeds with the Brown Swiss breed from Switzerland, the Kostroma breed from Russia and the Lebedin breed from Ukraine. These last two breeds are also crosses between original local

breeds and the Brown Swiss and Ayrshire. The Caucasian Brown was officially approved as a separate breed in 1960. Within the breed three production types can be distinguished; the dairy type animal, the dairy-beef type and the beef-dairy type. Herdbook cows have a shoulder height of 123-130 cm. The bulls weigh 760–800 kg. The breed is further characterized by a relative short body and strong legs and feet. The milk production of these Herdbook animals can be as high as 3200 – 4000 kg with 3.8 –3.9 % of butterfat. Presently the pure Brown Caucasian is difficult to find as for the past years there has not been any controlled breeding, and their milk production potential has gone down.

- The Black and White cattle breed was quite common during Soviet times, especially on the larger farms, but with the disappearance of these farms their number has been reduced too.
- The Red Gazakh cattle: this local breed developed through national selection and was mainly found in the regions of Agstafa, Tofuz, Gazakh and Gedebe. The adult cows reach a live weight of 380-400 kg and their milk potential is 1900-2000 kg/year. The breed is known for its hardiness and resistance to diseases. There are very few pure Red Gazakh cattle left in the country.
- The Azerbaijan Zebu is even more difficult to find these days. These black and brown animals mainly lived in the region of Lenkaran-Astara and were well adapted to the climatic conditions. The live weight of an adult cow is around 300 kg and the milk production potential is 500 kg/year.
- The Azerbaijan Buffalo became a recognized breed in 1970. An adult female can produce 1300-1500 kg/year, with 8% fat. The adult live weight of a buffalo-cow is 400-500 kg. The Azeri buffalo can still be found in all parts of the country and had a total population of 137.200 buffalo-cows in 2009 (11% of the total cattle population).

The production potential of the Caucasian Brown or the Black and White breed is not exploited with quoted production levels of 1000 – 2000 kg of milk annually and 3.8 - 3.9 % butterfat. Some improvement can be achieved through better feeding and management. However, years of uncontrolled breeding have reduced the genetic potential of all cattle, and breeding programs are essential to achieve substantial changes in both meat and milk production. This can be achieved through further development of field services for artificial insemination (AI).

Cows at a market in Azerbaijan; in front a local Black & White cow, all others belonging to the Caucasian brown type of animals. None of them was looking very productive.



Artificial insemination was established in Azerbaijan during the Soviet time. An AI station was built in 1956 at Pirchaagi with a capacity to house 86 bulls and to collect and process semen. The AI center at Pirchaagi stopped its semen production operations in 1996 not only because of lack of money but also because of a lack of customers. In most villages AI services were not available and the small farm size, the system of communal grazing, the lack of market outlets for raw milk and the low production levels also made it unattractive for farmers to invest in breeding through AI services.

In 2001 a new start was made with the establishment of field services for artificial insemination through a Dutch funded project. A total of 20 inseminators were trained, equipped and regularly supplied with liquid nitrogen (LN) and imported semen. The activities covered three regions: Goychay, Ismailly and Absheron.

Most of the selected inseminators were familiar with AI, either because of their position in the past as a zoo technician in one of the collective farms or by directly doing it. It was noticed during the interviews that their practical involvement stopped around 1994 and that they had no practical experience with modern insemination techniques. They had all been trained in the so-called vaginal method, while nowadays the rectal-cervical technique is applied. The main difference between the two techniques is that in the old method the semen is deposited before or in the cervix, while with the new technique the semen is deposited right at the end of the cervix or in the beginning of the uterus. The new technique results in better fertility rates with a lower number of sperm cells per doses. All 20 inseminators were trained to use the recto-cervical technique.

The basic (project) approach for the development of AI services which was proposed at that time and is still valid can be summarized as follows:

Phase 1: Farmers are made aware of the benefits of AI. Technicians are trained and strategically stationed to inseminate the maximum number of cows for the lowest costs. Semen is imported during this phase. A small office organizes all administration, logistics and training.

Phase 2: When the number of inseminations shows a steady annual increase, it becomes economically interesting to consider the construction of a small production center for about 4-5 proven sires. These bulls will have to be imported or leased from an AI company with a well-established testing program. The production potential of 4-5 proven sires is sufficient to cater to 100,000 – 200,000 first inseminations. All activities of Phase 1 will continue during phase 2. In addition to that a start has to be made with the introduction of milk recording.

Phase 3: During this phase the AI services start acquiring young bulls from abroad or from excellent farms within the country and submit these young bulls to a regular testing program within the country. In order to test one bull properly a hundred daughters have to complete a full lactation, preferably on at least 25 farms.

Now, ten years after the start of the AI field services, we can see that the AI services have gradually developed: through government and various NGOs a total number of 500 inseminators have been trained. However, response from farmers indicates that not all inseminators are fully qualified, which reduces the confidence in AI services. Apparently some 150 inseminators are actually active in the field. The total number of inseminations per year is approximately 60,000, resulting in some 36,000 calves¹. With a total cow population of 1.2 million heads, AI services only cover 5% of adult cows and even less of all "breedable" animals.

Semen imports continued. The private company Agro Lider imports semen from the Netherlands (progeny tested HF sires) and the Ministry of Agriculture imported semen from Russia until 2009. In addition there were limited imports through private companies and NGOs. In 2010 the Government of Azerbaijan established its own AI-Center at the Livestock Research Institute in Ganja. The Center includes a bull-station with 21 bulls and a semen production laboratory. The total investment was more than 4 million AZN. Within two months of operation the Center already produced more than 80,000 straws, enough to cover the total needs for more than 1 year. In an effort to cover the operational costs of the AI-Center the Breeding Department is now limiting the supply of imported semen and the further expansion of private breeding services.

The costs of AI services are 10-15 AZN per insemination. This includes the semen, transport and service fee. Imported semen is sold for 3.5 AZN per straw (average price), while the locally produced semen is sold for 2.5 AZN per straw.

¹ Personal conversation at MoA, Department of Animal Breeding

Insemination of an almost pure Holstein cow on a farm near Baku. The inseminator knows his trade and is using imported semen from progeny tested bulls.



During the field visits it was noticed that inseminators hardly know anything about the sires they are using from Ganja. These bulls are not progeny tested and have no reliable breeding values. Apparently semen quality was also giving problems, leading to repeated inseminations per conception. This combination does not help to stimulate farmer's confidence in AI services and with a price difference of only 1 AZN inseminators clearly prefer imported straws.

An additional constraint is the fact that each inseminator has to arrange his own LN supply. This means that every month or at least every two months he will have to travel to either Ganja or Baku to refill his LN container. If he waits too long, the straws will lose their quality. A more organized system of LN supply is needed.

If we look at the three Phases for development of AI services, we can conclude that based on the present number of inseminations we are still in Phase I: creating awareness and gradual expansion of the services, using imported semen. The establishment of the AI-Center has come too early to justify the investments and leads to the use of lower quality semen and unfair competition in the provision of AI services.

The first need now is to create a link with the milk collection systems that are being developed by the dairy plants; the demand for AI services is directly connected to the markets for raw milk. If raw milk can be sold at an attractive price, farmers will wish to increase yields and thus have an incentive to breed more productive animals. Other important steps are:

- The development of a standard curriculum for the training of inseminators and strict control on the quality of the practical and theoretical skills of an inseminator before he is allowed to provide these services. A government approved certificate would be a good option.
- The organization of a structured supply of LN and semen. This could be done by the government or the private sector. The main aim is that inseminators would not have

to travel themselves and at the same time the supervision on services would be improved.

- Both inseminators and farmers need better information on the advantages of AI services and the sires that are being used. That means that sire catalogues are needed with information on pedigree and breeding values for all important traits.
- Allowance for free market development that will give inseminators and farmers the choice of breeds and sires. The government should refrain from putting restrictions on the marketing of semen, but only ensure that quality standards are met.

A quicker, but more expensive way to improve the genetic potential of cattle is the importation of pedigree heifers. In 2007 a modern, large scale dairy farm was established in the Sheki region and all 600 heifers were imported from the Netherlands. The farm was managed by a foreign specialist for a number of years to ensure that capacity building could take place before the management of the farm was handed over to a local livestock specialist.

Through Agro Leasing, a government organization that was established in 2004 to support the development of agriculture, pedigree cattle has been imported in more recent years (776 heifers in 2009 and 1,600 heifers in 2010, mainly from Germany).

The heifers that were imported in 2010 were given on lease to 63 farms. The farms pay 50% of the official purchase price, which in 2009 was almost 4,000 AZN. Normal market value of these heifers would be between 2,000 and 2,500 AZN, which means that Agro Leasing is either purchasing at a much higher cost than would be needed under private sector conditions or not transparently representing the real cost of the animals. An advantage is that farmers can pay in three years.

One farm that had obtained eight pregnant heifers was visited. Only four cows were still alive, of which three were still not pregnant, eight months after calving. The condition of the cows was poor and that of their calves was even worse. The local cows and young stock on that farm were also in poor condition. It was clear that these animals would never perform as expected and that the management level of that farm was far below standard.



Only 4 out of 8 cows were left in the barn, of which 3 were not pregnant. These cows are not managed properly and will not produce as expected.

From various sides we received similar observations. Many farms cannot provide the management and feeding that is required to keep imported heifers. There is no experience in the country to manage 8,000 litre cows: not with the farmers, nor with the veterinarians or extension staff, if available.

Under Azeri conditions a very strict selection of farms will be needed before such a distribution program of imported heifers can be carried out successfully. Instead of high productive Holstein cows, one could consider limited imports of Brown Swiss or Simmental heifers which are slightly easier to manage. The best option, however, is the gradual improvement of genetic potential through AI services.

The improvement of the genetic potential of the cattle population is a long term activity. A cow inseminated today will deliver a calf 9 months later, after which it takes another 2-3 years before that female calf has produced a calf and starts producing milk. This long term approach is a big advantage under the present circumstances, since it will allow the farmers to improve their husbandry methods to a level that enhances milk production.

2.3 Animal Nutrition

The basis of cattle production is an adequate supply of good quality roughage. With the process of privatization the majority of collective and state dairy farms were privatized, which meant that the land and cattle were divided among the workers. Organized, large-scale farming came to an end, to be replaced by a large number of family farms, households and officially registered private farms. The 2,409 registered farms only contributed 14,300 tons or 1% of the total milk production in 2009. All other milk was produced by more than 850,000 households, keeping an average of 1-3 cows.

While the former state and collective farms still could produce grass, alfalfa, and maize silage, this is not possible for the households as their scale of farming is too small. The most common

system is to take the animals out for natural grazing from April until October and feed some wheat bran as supplement. From November until March the cows may go out for a few hours, but in this period the main source of feeding is hay coming either from natural grasses/legumes or from alfalfa. Wheat bran is supplemented in small quantities. An adult cow of 450 kg live weight will eat 8 - 10 kg of hay per day (DMI = 1.8% of body weight) or a minimum of 75 bales of hay during the winter period.

The feeding value of the natural hay allows for maintenance and a few litres of milk. Alfalfa, when cut at the right stage and handled carefully, has a higher feeding value. The alfalfa hay that was seen during farm visits was all of a lower quality. Normally two cuts can be used for hay-making from natural grass, without irrigation. One hectare can give 150 - 250 bales of hay per cut or 5-6 ton DM/ha. In most cases more bales means cutting at a later stage of growth and thus more fibre and a lower feeding value. Alfalfa grown under irrigation may yield 4 cuts, with an average of 100 -150 bales per cut/ha (18-20 kg per bale or 8- 10 t DM/ha). Surplus alfalfa is often sold at the market and in some areas alfalfa is just grown for the market.

Hay quality, both of natural grass and alfalfa, often is just enough to cover the needs for maintenance and a few liters of milk.



Alfalfa hay is sold at 2.5 AZN per bale (15-18 kg average = 0.12 - 0.15 AZN/kg). The price of wheat bran is 0.20 AZN/kg. With a consumption of 10 kg hay and 1 kg bran, the feed costs amount to 1.40 – 1.70 AZN. That is about enough to cover the costs of 4 - 6 liters of milk.

According the Ministry of Agriculture there are 390,000 hectares cultivated with alfalfa, most of which will be under irrigation. The central plains are the main alfalfa producing areas. Other crops such as fodder beets, corn and soy are only produced in small quantities.

Compound feed is produced, but hardly used for feeding dairy cows. The main feed mills are:

- Golden Feed in Ganja
- Azeryam Feed in Balakan and
- Azersun Sugar beet Factory in Imishli

In addition there are some feed mills that mainly produce for their own use (e.g., broiler farms, Shaki Agro, Ivanovka) and a few that produce limited quantities or are out of operation (Saatli Feed Mill and Alibayramli Feed Mill).

Market visits showed that feed ingredients and compound are available, but too costly to be used for milk production:

Product	Price (AZN/kg)
• Wheat bran	0.20
• Barley	0.40 – 0.50
• Corn (crushed)	0.40 – 0.50
• Wheat	0.35
• Cotton seed	0.40
• Wheat flour	0.30
• Compound feed (small pellets)	0.80
• Compound feed (Azeryem)	0.50

Wheat bran is at present the only affordable product for dairy farmers. Imishli Feed Mill sells its compound feed at 40+ AZN/kg, but has a minimum purchase volume of 2 tons. Price reductions based on quantity can be interesting if the dairy plants are willing to purchase in bulk and distribute the feed at cost-price to their milk suppliers.

Feed ingredients and compound feed are available, but at prices that are too high to justify their use for milk production.



Compound feed and basic ingredients for feed are expensive for a number of reasons:

- In 2010 floods caused serious damage to all crops. Cereal production dropped by 20% compared to 2009.
- High protein elements (e.g., soybean meal and sunflower meal) are mostly imported, for which formal and “informal” custom duties have to be paid.
- The small amount of edible oils produced locally is being priced in accordance with the imported product (just a few AZN/ton less than imports to maximize the profit).
- Premixes and corn are mostly imported.
- The monopolies for certain feed ingredients make a free market approach more difficult and have a negative impact on prices.

During the harvesting period feed ingredients are cheaper, but most farmers only buy small quantities as they do not have the cash to buy bulk and store it for the winter period.

Feed and fodder are considered the main constraint for cattle production and milk yields. An FAO publication on pasture and forages in Azerbaijan² provides a detailed description of the natural resources of forage and the main fodder crops. Important factors that lead to the shortage of fodder crops are given, such as:

- Poor soil fertility;
- Relatively low quality of pastures;
- Overgrazing or grazing without control;

² Country Pasture/Forage Resource Profiles - Azerbaijan by Dr. E. Kosayev

- Lack of inputs like high quality seed material, mineral fertilizer and plant protection means; and
- Soil erosion in mountain and foothill zones.

In the past most fodder seeds were produced by state seed farms, but after the agrarian reforms most state farms were abolished. Only a few research institutes, of which the Research institute of Forage Crops, Meadows and Pastures is the most important, remained involved in seed production. These days most seeds come from on-farm production and farmer-to-farmer exchange. The purity of these seeds is assumed to be not very high, and new and more productive varieties are difficult to find.

2.4 Housing

Barns for cattle are simple sheds, where it is difficult to keep the animals clean. In summer the animals are mainly outdoors, but in winter they spend most of their time inside the barns. Under these conditions the production of clean milk becomes very difficult.

The barns that were seen during the mission have the following main disadvantages:

- Feed troughs are an obstruction to cow movement and difficult to clean.
- Cow stands are too long, making it difficult to keep the cows clean and to produce high quality milk.
- Cows are mainly kept on concrete flooring which hinders natural movement (getting up and laying down), not only reducing feed intake and thus milk production, but which is also inconsistent with dairy cattle welfare norms.
- Light and ventilation are often limited and cause health hazards.

Better designs, both for loose-housing systems and tie-up systems and that are more focused on animal welfare norms, are available and should be introduced to create better awareness on animal housing among extension staff and farmers. Construction of poorly designed barns (resulting in unhappy farmers and cows) should be avoided.

Simple modifications are possible, without major investments. However, as long as milk production is only a side activity and mainly meant for home-consumption, farmers will not be very willing to make an effort to improve housing conditions. Changes will have to come from those farmers who are making dairy production their main activity and who intend to invest in better breeds, improved nutrition and modern farm management practices to increase milk yields and production efficiency.

Cattle barn in one of the villages visited. In this case light and ventilation were sufficient, but long cow stands made hygienic milk production difficult. Feed troughs are difficult to clean and an obstruction for movement.



2.5 Input Supply and Contracting Services

When asked, a farmer replied that all his basic inputs were available. For many Azeri households keeping cattle that statement will be true. The system of cattle farming is very basic and hardly needs any inputs. Milking is done by hand, feed is cut in the fields or obtained by grazing, balers for hay-making are available, barn equipment is not needed, and medicines can be bought on the green markets.

The situation is different for those farmers that want to become professional dairy farmers. There is no functional distribution network for inputs such as farm machinery, barn equipment, milking equipment and other necessary inputs. One farmer was using drinking bowls from the Soviet time: very functional, but impossible to replace when they break down.

It is also difficult for farms to obtain information on modern dairy farm management: not only because there is a lack of good information material (e.g., leaflets, TV, books and magazines), but also there are no good demonstration farms to visit. Even for extension staff it is difficult to imagine what a modern dairy farm looks like, as they have no examples in the country to draw from.

Besides the lack of inputs for all kinds of equipment, there is a shortage of inputs such as high quality seeds, fertilizers, pesticides and herbicides. All these factors result in lower yields and thus higher production costs.

In an attempt to support these constraints in agriculture the Government established the leasing and contracting company 'Agroleasing' in 2004. In addition to the import of pedigree heifers, as mentioned earlier, this company also provides fertilizers, seeds and farm machinery. The total turnover of Agro Leasing has been increasing over the past few years and reached 60 million AZN in 2008. More than half of the budget was used for the provision of fertilizers. Farm

machinery accounted for 12 million AZN and showed a decline with the previous years. The organization of the company activities was 10 million AZN.

The idea of provision of farm equipment and other inputs at subsidized rates and with payments over periods from 3-10 years sounds very attractive, but the practical implementation of this program appears less beneficial than it was meant to be. A general complaint of farmers is that even with a 50% subsidy the actual prices are close to normal market value. This is true for fertilizers, seeds and farm machinery. There is a limited choice of products and still substantial paperwork. Agroleasing has to identify the needs, submit the list to the Ministry of Agriculture for approval and then follow the state procedures for tendering. This means that farmers can only buy from available stocks or have to wait until the next round of tendering. Part of the farm machinery goes to the contracting companies that belong to Agroleasing.

There are contracting units in 37 regions all over Azerbaijan, totaling 102 service points. In principle these units are self-supporting and self-financed. Their main services are soil tillage, sowing, grain harvesting and harrowing (in order of importance). In most cases the contracting units and agro-service branches are located in the same place. The cost of contract work (see Appendix 4 for a detailed price-list) seems more than reasonable, but again, actual prices may differ from the formal prices listed and during peak periods not all demands for services can be honored.

Commercial contracting services hardly exist, but it is common that neighbors and relatives share equipment or provide paid services. A common price for baling is 0.20 AZN/bales, which would be 30 to 40 AZN/ha. Agroleasing charges 0.10 AZN/bale, but at this price the service may only be available for larger farms.

2.6 Milk Storage and Handling

At the farm level there are very few facilities for milk storage. Most milk is consumed directly or processed at home into white cheese or butter. Only surplus milk is sold if there is a market for raw milk.

Barn conditions make it difficult to produce clean milk. At the milk collection centers we can see dust and dirt floating on the surface. What we do not see is the number of bacteria and somatic cells inside the milk, nor any additives that may be present as well.

In winter milk is collected once a day (in those areas where there is a commercial milk collection system) and milk is kept in all kinds of cans or containers, cooled by outside temperatures or cold water. In summer milk collection takes place twice a day and preferably shortly after milking. As ambient temperatures are high, the quality goes down fast. Only a few

large farms have on-farm cooling equipment, which makes it possible to avoid further loss of quality.

In section 3.2 we will discuss milk collection and storage in more detail.

2.7 Farm Management

Milk production is based on tradition. For most households farming is first of all a matter of self-sufficiency in food products. Land is limited and wheat is the main crop. Feed and fodder are produced as secondary crops and where possible natural pastures are used to feed the livestock.

During Soviet time many people living in the rural areas may have worked in agriculture, but only in specific jobs on the many collective and state farms, certainly not as farm managers, responsible for all parts of crop and livestock production.

During the past twenty years they had to make a living from agriculture, without much government support and limited services, inputs and information. The majority worked on a basis of low input, low output, avoiding risks and considering sales as extra income.

Now, with the investments in milk processing and an increasing demand for high quality raw milk, farmers will be given an opportunity to develop from subsistence farming to professional dairy farming. This is a process that will take time, but we have seen similar developments in other European countries as Poland and the Balkans. There the main thrust was a combination of three factors: (1) introduction of EU legislation on milk quality standards, (2) a government policy that stimulated investments in expansion of dairy farms and (3) dairy plants that supported the investments through extension and incentives for quality and quality. In Azerbaijan a similar combination of support measures will be needed.

2.8 Transport

Wherever there is a milk collection system in operation, farmers can deliver the milk to the trader or milk collector directly at the farm. This system has developed during the past years and is now widely accepted. Farmers may at most have to walk a few hundred meters to a simple collection point.

Milk producers that live near urban areas have an opportunity to sell their milk directly to consumers. This is far more attractive and covers the cost of extra transport and time. In general transport is not a major limitation for farmers to improve production, but it may limit their marketing potential.

2.9 Market Information and Linkage

Milk marketing is the key to dairy development. As mentioned before, for many producers milk sales are a source of additional income. If milk can be sold in the village or nearby markets, the farmer can receive 0.50 to 0.60 AZN per liter in winter. In summer, when milk is available everywhere, these prices will be lower. If he has to sell to a trader or milk collector, he may receive 0.20 or 0.30 AZN for the milk in winter and less than 0.20 in summer (if he can sell the milk at all).

Butter and white cheese production are attractive if sufficient milk is available for home processing and marketing. In various green markets that were visited some 8 to 10 farmers were trading on a daily basis. They used their own milk plus that of some of their neighbors. Prices obtained depended largely on quality and fat content of the white cheese. Assuming that 7 liters of milk is needed for 1 kg full cream cheese, which sells at 6-8 AZN/kg, then these farmers can make a substantial margin on their production costs.

A green market in Lankaran: a daily supply of home produced cheese, butter, cream and fresh milk.



The majority of milk producers are not in a position to create this extra income. Partly because they produce their milk at a time when there is a surplus (spring and early summer) and prices are low, and partly because milk collection systems are not developed yet and local markets are too far to be attractive.

One can question if better market information would change this situation. Of course it is useful to be aware of raw milk prices, but most farmers appear to be well aware of the local prices and market conditions. None of the interviewed farmers seemed to aim for more milk during the winter period: breeding was uncontrolled and calving patterns just a matter of natural conditions. The present feed prices also make it difficult to maximize milk yields in an economic way, even if the farmer would aim for higher production levels.

2.10 Access to Finance and Financial Planning

Investments are needed to reach higher levels of production and to reach acceptable quality standards. However, with an average milk price of 0.25 AZN and production levels below 1500 kg/cow it is difficult to make enough profit to make these necessary investments.

Credits are expensive (>25% interest rate) if available at all and therefore returns on investment should be clear and safe. Milk processing is seen as a way to create added value to the raw milk, but this does not change anything with regard to the basic production problems.

There are several credit suppliers that also give loans to the agricultural sector, some of these are:

- Agrarkredit
- Access bank, and
- Cred Agro

Business Development Services (BDS) help applicants with a business plan, of which the main purpose is to obtain the loan. Most of these BDS organizations were established through earlier projects and are now working as independent companies.

Agroleasing can also be considered a credit supplier through its leasing system. Other commercial leasing companies do exist, but none of them is involved in agricultural production.

The micro-credit system is generally seen as a very positive tool towards development, but where companies in western countries can borrow at interest rates of less than 8%, small farmers here have to pay three to four times more for their loan. This is partly because the management of small loans is more expensive, but another important factor is that each of the fund suppliers has to make a margin. Often there are several banks and organizations involved before the credit reaches the farmer. Loans for seeds or fertilizers, with a short repayment period, are until manageable. Loans for investments in cattle production need more time for repayment and therefore become very expensive.

Interest subsidies are an effective tool to stimulate investments in agriculture and dairy development. Households that wish to make the move from subsistence farming to professional farming have to make substantial investments. They can only do this if the risks are minimized (e.g. through supply contracts) and the costs are justified.

2.11 Association Building

Individual farmers are difficult to reach for any service provider or donor organization. They are also weak partners in marketing their products and for purchasing inputs at better rates. This combination of factors makes it interesting for them to form associations.

Often the word ‘association’ is still connected with the idea of “collective” and has a negative sound. In many countries farmers have united in cooperative systems, which proved to be very effective. In those cases production is still the responsibility of the individual farmer, while marketing and inputs are organized by the group.

In Azerbaijan the forming of associations has been attempted by a number of NGOs, with varying degrees of success. Failures may have several reasons, such as:

- Formal registration of associations is problematic, which does not encourage farmers to participate;
- There is no clearly defined goal which the farmers bind together around;
- Some large farmers have all the benefits, while others hardly see any advantage; and
- Lack of management skills and transparency in financial issues.

In many cases a simple form of cooperation, without formal registration, but with a few clear goals can be very effective such as: marketing raw milk as a group (offering a larger quantity and of better quality), purchasing inputs in sufficient quantities to obtain discounts, attracting AI services and/or extension services.

In Section 5 we will discuss the role of service providers and their support towards association building in more detail.

3 Milk Processing

3.1 Introduction

In Azerbaijan dairy products are traditionally an important part of the diet and widely used as ingredients in Azeri dishes. Azerbaijan differs from other countries, in that liquid milk is not much consumed by itself but rather is used to make products as cheese, butter, gatig, quark, gaymag and others. While the tradition of home processing goes back for centuries, industrial processing is fairly new.

The dairy industry has been subject to large structural changes in recent years: most of Azerbaijan's state-owned milk processing plants went through a process of deterioration and closed down. Less than 5% of all milk was processed in formal dairy plants, while all other milk was either consumed at home, or processed and sold by small traders. It is only recently that we can see structural changes taking place in the processing industry.

3.2 Processing Capacity

For a number of years there were only two major private milk-processing plants, the Azerbaijan Dairy Corporation (ADC) and Milk-Pro Limited. Meanwhile ADC has gone out of business, but Milk-Pro has grown stronger and developed its capacity to more than 120 tons per day.

More recently two new dairy plants became operational: Pal Sud in Lankaran with a processing capacity of 150 tons per day and Belisuvor-Agro in Belisuvor with a processing capacity of 100 tons per day. Before the end of 2011 three more companies will start dairy processing with a combined capacity of 350-600 tons per day. In addition there are some 80 smaller processing units, most of them with a capacity of less than 3 tons per day.

In 2010 the total annual raw milk production was estimated at 1.5 million ton or just over 4000 tons per day. Of all this milk less than 200 tons per day is presently collected by the formal dairy plants. Small milk processing units, operating at 1-3 tons per day, may collect another 100 tons per day.

A new dairy plant, with a processing capacity of 400 tons per day.



Within a very short period the total processing capacity will increase from less than 200 ton per day to more than 800 tons per day. This will not only have an impact on the demand for raw milk, but also the market for dairy products will be facing stronger competition.

The main formal processing companies are listed below.

No.	Name	Product range	Installed capacity	Actual capacity use
1	Milk-Pro	See Appendix 5	120 tons per day	40-60 tons per day
2	Pal Sud	Similar to M-Pro	150 tons per day	60-80 tons per day
3	B-Agro	Milk powder and butter	100 tons per day	50 tons per day
4	Atena	Will produce complete range	400 tons per day	Not yet in operation
5	Azersun	No information yet	50-100 tons per day?	Not yet in operation
6	Hacigabul	No information yet	10 tons per day	Not yet in operation
7	Gilan Terter	No information yet	10 tons per day	Not yet in operation
8	Gilan Gebele	No information yet	10 tons per day	1 tons per day
9	Gilan Zaqatala	No information yet	20 tons per day	2 tons per day
10	Gilan Agjabedi	No information yet	20 tons per day	Not yet in operation

11	Gilan Tovuz	No information yet	10 tons per day	Not yet in operation
12	Barda Dairy	Cheese, yoghurt, cream, butter	40 tons per day	10 tons per day
13	Ivanovka	Cheese, yoghurt, cream, butter	10 tons per day	8-10 tons per day

A new dairy complex is under preparation in Agstafa. A German-Azeri venture, with involvement of the Azerbaijan Investment Company, is planning to invest almost 30 million Euros in the establishment of 4 dairy farms with 600 milking cows each and a milk processing plant. More detailed information is available on their website: www.agstafasud.az. Although this project is fully self-supporting and large-scale, employment opportunities will be provided for people living in the neighbouring villages and spin-off will be created for input and service providers.

3.3 Milk Collection and Quality Control

All modern dairies wish to obtain a regular supply of high quality raw milk and are making efforts to establish a milk collection system that can achieve this goal. However, with so many small farms that all produce under fairly unhygienic conditions it is very difficult to achieve that goal. In most cases the system works as follows:

Milk collectors, either employed by the dairy plant or working independently, go from farm to farm to collect milk. One collector normally covers one village. The farmers use their own containers during milking, but then the milk is transferred to larger containers which are used by the milk collectors. The collector has to decide if the milk quality has an acceptable standard or should be refused.

In winter all milk is accepted as there is a severe shortage. In summer the quality demands are stricter and the higher temperatures also have a negative effect on the milk. The first test is the organoleptic control: visual appearance of the milk, smell and taste in case of doubt. In addition the collector may carry a device to see if water has been added to the milk and he can do the alcohol test. Once the milk has been accepted the farmer will get paid for the milk, mainly on the basis of quantity and average fat content in the bulk delivered to the collection center.

The next step is the transport of the milk to a collection center with bulk cooling. Some dairies have one large milk collection center (MCC) that covers a number of villages; others also have smaller MCCs which are used for 1 or 2 villages. From the smaller MCCs the cooled milk is then taken again to a large center adding one extra step in the collection process.

At the MCCs the milk is tested again for acceptance and quality. Here a lactoscan is used to determine milk composition (fat, protein, lactose) and again water addition (which is a common problem). Alcohol test and titration are sometimes done as well to check the “keeping” quality of the milk (acidity). At this stage some milk might be rejected again, and now it is the milk collector who has to take responsibility. He gets paid according to the total quantity that is accepted and the fat content of the bulk. In practice he will divide this amount over all the milk suppliers, which means that the producers all get the same price for their milk, irrespective of quality.

Basic milk testing equipment at one of the MCCs. Calibration and maintenance of the Bulgarian milk testers is a problem as there is no technical service in Azerbaijan.



From the large MCCs the milk is taken in large milk trucks to the dairy plant. Again quantity and quality are measured by the truck driver before acceptance and lastly after arriving at the dairy plant.

The larger milk collection centers (MCCs) receive the milk from various collectors and/or small MCCs that cover one or more villages each.



The process of milk collection is costly and time consuming. Each collector is driving a car (pick-up) to collect the milk; twice per day in summer and once in winter, and in addition larger milk trucks are needed between dairy plants and cooling centers. The collectors are normally paid 0.05 AZN per litre milk, depending whether they use their own car or a company car. Milk collection cost may be as high as 0.07 - 0.09 AZN per litre milk. In February the average milk delivery per farm was less than 5 litres per day. Even the largest family farms supply less than 100 litres per day.

3.4 Milk Quality Standards

Milk quality is determined by its composition and its biological quality (e.g. total bacteria, somatic cells, absence of inhibitors such as antibiotics or any other substances which should not be in milk). In countries where the dairy sector is more developed, milk payment systems reflect milk quality: the milk price is based on fat and protein content, with a bonus/penalty system for biological quality. The conditions in Azerbaijan make it difficult to introduce a more advanced quality control and payment system for several reasons:

- The housing and management systems for dairy farming make it difficult to produce 1st class milk;
- There is a lack of simple testing equipment to conduct proper, but fast, high quality control (testing) at the farm gate;

- Milk collection until cooling takes too long, as all milk is collected at the farms and one collector has to cover many suppliers;
- Competition for raw milk makes high demands for quality difficult, as the suppliers will then deliver to less demanding dairy plants in the absence of industry quality standards enforcement; and
- There is no individual testing and payment system, so farmers do not have an incentive to produce milk of a higher quality.

A gradual introduction of quality standards will be necessary and the best way of reaching this objective is through a coordinated approach of all dairy plants. Dairy plants may compete on milk price, but they should not compete on quality standards.

Milk quality improvement starts at farm level: good hygiene in the barn and during milking, proper storage and handling of the milk until delivery and no addition of any substance to the milk. This can only be achieved if the payment system reflects quality and if farmers are made aware of quality standards and know how to reach them.

One of the dairy plants already employs its own extension staff, mainly with the purpose to obtain higher quality milk and more milk per farm. Other dairy plants receive support from service providers (through donor funding) that have a similar extension task.

3.5 Seasonality of Milk Supply

An additional complication in milk collection and supply is the strong seasonality in production. In summer the total milk supply may be 3 - 4 times higher than in winter. The market for dairy products does not show much variation, which means that in summer the dairy plants receive more milk than they can sell after processing and in winter they cannot meet market demand.

The main causes for seasonal variation in production are:

- Calving season: most calves are born in spring, which means cows have their peak production in early summer when natural forage is available,
- Lactation length: the local breeds have a lactation period of 6-7 months after which they will not produce milk until the next calving.

Feeding cows in summer, when grass is freely available, is cheaper than feeding them in winter with expensive hay and concentrates. Detailed cost calculations are needed to show the economics of summer and winter production.

Those farmers that were interviewed said they did not really aim for summer or winter milk. Breeding was not controlled and apparently the natural processes of reproduction led to more spring-calving.

In this barn there were a number of young calves, born around October 2010. Good for winter milk production, when the raw milk price is high.



The first step to reduce seasonal variation is to motivate farmers to pay more attention to reproduction: controlled mating and working towards year-round calving patterns. The introduction of AI services will make it necessary for farmers to do heat detection and to decide if a cow should be inseminated. In addition the use of good sires will lead to cows with higher genetics for milk production and longer lactation periods.

Having more productive cows will also make it more attractive to improve nutritional standards; the cows will respond better to higher levels of nutrition. The cheapest way of improving nutrition is an adequate supply of high quality forage, supplemented by concentrates to meet the specific requirements of a cow. In that respect there is much to improve. Dairy plants can and should play an important role in the development of the dairy sector as it is in the interest of all parties to improve milk yields and quality.

3.6 Milk Processing

The new processing plants are well designed, modern plants with the latest processing equipment. They all have HACCP standards and some of them already applied or obtained ISO 2200. All plants are built by strong companies, which employ qualified (foreign) managers.

During interviews it became clear that they all aim for the higher segments of the dairy market and place much emphasis on quality and branding. The milk processing is not their main concern, nor the marketing of their products. The most important issue for them is to obtain sufficient raw milk to ensure that they can maximise the installed processing capacity and meet the market demand for dairy products throughout the year.

4 Milk Marketing

4.1 Introduction

In the previous section it was already mentioned that most of the milk produced in Azerbaijan is consumed at home or traditionally processed in the villages, either for own use or direct sales.

The premium segment of the market, about 10% of the total market, is almost completely supplied by imported products, mainly from Russia, Germany and Turkey. As the oil industry is booming with high prices, it is expected that disposable income of the (Baku) population will increase further and as a result we expect a growing demand for premium quality dairy products.

There are no solid consumption data available for any of the products, but the table below gives an impression of the trends in the supply and consumption of dairy products.

Table 4.1: Milk production and Use (2007 - 2009 in Milk Equivalents and Metric Ton)

	Unit	2007	2008	2009
Local raw milk production (ME)	MT/year	1.341.100	1.381.600	1.433.100
Imports of dairy products (ME)	MT/year	208.100	182.800	276.800
Total availability of dairy products	MT/year	1.549.200	1.564.400	1.709.900
Consumption of dairy products per capita (ME)	Kg	280.2	282.6	291.3
Calculated consumption per capita (ME) (*)	Kg	178.8	178.2	192.8

Source: State Statistical Committee of Azerbaijan

(*) Based on the total production and import figures, the calculated per capita consumption is substantially lower than the official data.

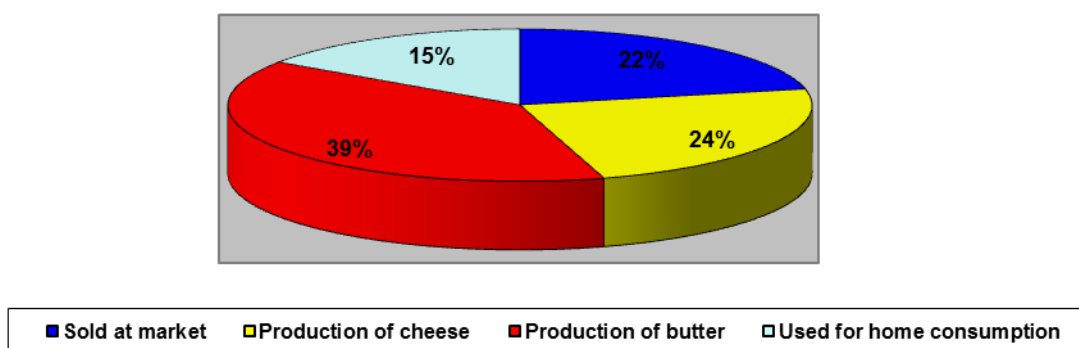
The data for 2009 in the Statistical Yearbook 2010 are not consistent. Milk production figures differ: the table that explains the usage of milk shows a production figure that is 245,014 tons higher than the figure mentioned above. On the other hand 42,443 tons of milk is used for calf feeding. With an average calving rate of 85-90% that would be some 40-50kg of milk per calf. Normally that would be 250 - 300 kg per calf from birth until weaning. This could explain the difference in data; the production figures could be considered the quantity of marketable milk. However, there is no explanation for the sudden increase in production for 2009 compared to the previous years.

The total imports are estimated at 13 - 15% of the total consumption. It is important to know that the official statistics show import figures that are substantially below the actual imports. To avoid import duties and tax payments, imports take place without formal registration. This also means that the potential market for dairy products will be higher than can be deducted from the available data.

4.2 Local Production and Supply

Until recently only 5-10% of all milk produced in Azerbaijan was collected by the formal processing industry. All other milk was consumed at home or sold through informal market channels (this corresponds to some 75% of the total consumption of dairy products). According to a local survey, the Food Security Information System, this locally produced milk was used as follows:

Chart 4.1: Application of locally produced cows' milk



Home processing is very common and part of the processed home products is sold on the market, in addition to the milk directly sold to neighbours or at the local bazaars. The charts below show which part of the white cheese and butter -the main products of home processing- are finding their way to the markets again.

Chart 4.2: Application of the locally (home) produced white cheese

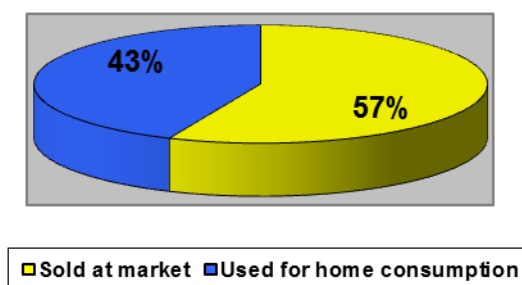
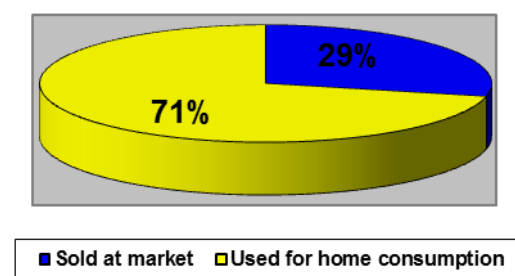


Chart 4.3: Application of locally (home) produced butter



At the green markets that were visited, both in Baku and the regions, there was a good supply of local dairy products. Both farmers and traders come to these daily markets and find consumers that strongly believe in the natural quality of the various types of white cheese, yoghurt, butter and fresh milk.

Bazaar			Baku	Lenkaran
Product	Volume	Description	Price (AZN)	Price (AZN)
White cheese	1 kg	cow milk full fat	8.00 - 10.00	4.00
White cheese	1 kg	cow milk medium fat	4.00 - 6.00	
White cheese	1 kg	cow milk low fat	3.00 - 5.00	
White cheese	1 kg	sheep milk, full fat	10.00	
Fresh Milk	1 kg			0.60
Butter	1 kg			6.00

Cheese	1 kg	very young, not solid	2.00	
Yoghurt	1 kg	very thick, no water	1.50	
Yoghurt	1kg	cow milk, standard	1.30	1.00
Yoghurt	1kg	buffalo milk, standard	2.00	

Prices of white cheese vary substantially, mainly depending on the fat percentage in the cheese. According to the traders there is no need to be afraid of competition from the new dairies as buyers like to come to the bazaar. If they can afford it, they will buy the best quality. In summer the above mentioned prices may drop by 30% as during that period there is a surplus of milk.

At present only Pal Sud, M-Pro and Belisuvar-Agro have a substantial network for milk collection in operation. Both Pal Sud and M-Pro produce a fairly wide range of milk products (see Appendix 5 for the price list of M-Pro). Both companies are directly competing with the imported dairy products.

B-Agro only produces milk powder and butter, mainly for industrial purpose (e.g. bakeries). This provides an opportunity to utilize the surplus milk in summer in an effective way and at the same time reduce the imports of milk powder and butter.

4.3 Product Range

Milk and dairy products are an essential part of the local diet and this is clearly visible in the shops: every shop has at least a variety of milk, cheese, butter, yoghurt and yoghurt drinks. If the shop is larger, the variety in brands as well as the product ranges increases. Supermarkets will also have a range of hard cheeses, which is less common in the small and regional shops. In addition to packed and branded products, it is also common to find white cheese, yoghurt and cream in bulk in the smaller shops.

Suppliers	UHT	White cheese	Yoghurt (plain)	Smetana	Butter	Yoghurt (fruit)	Yellow cheese	Qatiq
	(AZN/kg)	(AZN/kg)	(AZN/kg)	(AZN/kg)	(AZN/kg)	(AZN/kg)	(AZN/kg)	(AZN/kg)
Mpro	1.30 - 1.40	6.20 - 6.50	1.60 - 1.70	6.00 - 6.50	9.00			1.80 - 2.25
PalSud	1.40 - 1.50	6.80	1.60					
B-Agro					7.20			
Ivanovka		5.40						
Barda		5.00 - 8.60						
Local packaging					3.40 - 4.00		6.20 - 9.25	
Local producer		3.00	1.30 - 1.50		4.00 - 8.60			1.60 - 1.80
<i>Imports from:</i>								
CIS countries	1.50 - 2.20	6.40 - 12.00		4.30 - 5.50	4.85 - 8.50	2.40 - 4.00		
Denmark		4.00 - 5.60		6.00 - 6.50				
Balkan/Turkey		8.50 - 10.00						
France			2.80	6.75	9.75	2.80 - 4.70		
New Zealand					8.90 - 9.75			

Note: Main brands from CIS countries are Wimm-Bell-Dann, La Crima, Ehrmann and Campina. From Turkey Pinar and Yorsan, from the Balkan we have Sabac and Balkani, from France President and Danone and from New Zealand Anchor.

The above products and prices are just meant as an indication of what is available on the market. The branded local products are sold slightly cheaper than the imported products from well-known dairy companies. In addition there are substantial imports of lower quality products, such as yellow cheeses and butter that are packed locally and sold under different names. There are two quality types of butter: the cheap one is used for baking, the more expensive one is used on bread. In the better supermarkets high quality imported cheeses can be bought for up to 25 AZN/kg. Price differences for the same product are a matter of pricing by the various shop owners.

The prices are all per kilo, but packing is in various quantities. Fruit yoghurts normally are 4-120 gram cups together, butter is available in packs of 200, 250, and 500 gram or cut from 5 kg blocks. Similar types of packaging are used for other products. In general we can say that the smaller the package, the higher the price per kilo.

Some shops claim that local products sell better; other will tell you the opposite. It appears that consumers with a higher disposable income have less confidence in the quality of the local branded products than in those that are imported. This perception may not always be based on actual quality indicators, but could well be a more subjective opinion. It is remarkable that in general there is a preference for Azeri products and that many people like to buy at the green markets, with the idea that the quality of those products is 'pure and natural'. In reality these products are made from the same milk, often without pasteurization and without any food inspection or quality control.

A large variety of dairy products is present in most shops and supermarkets



Prices for dairy products are relatively high if we compare prices with those in the Netherlands where 1 litre UHT milk is 0.75 AZN and 1 litre plain yoghurt is 0.75 - 1.35 AZN, depending on fat content. Fruit yoghurt is 3.50 AZN/kg and young Gouda cheese sells for 5.00 AZN/kg. The most expensive butter is 6.00 AZN/kg.

As most products have to be imported and are subjected to import duties, it is understandable that their prices are relatively high. The price of local products depends to a large extent on the cost of raw milk and the utilization of installed processing capacity. In winter the cost of milk can be as high as 0.45 AZN/kg, including transport and milk collection. In summer the cost will be 25 - 35% lower. None of the dairy plants is working at full capacity as milk supply is limited and seasonal variation too much to cope with. This means that the indirect costs (e.g. depreciation, interest, labour) per kg product are much higher. A lower cost price for dairy products can only be achieved if the costs for raw milk go down (more productive cows, more milk per farm, and better distribution throughout the year) and installed capacity can be used effectively. This is the main challenge for all existing and new dairy plants.

5 Support Services

5.1 Introduction

Donor organizations and NGOs have been working on agricultural development for quite some years and part of these activities was the establishment of so-called 'Business Development Services' centers. The service suppliers assist farmers with business plans and obtaining credits, they provide extension services and try to link input suppliers with potential clients.

When the projects come to an end, these BDSs are expected to continue on a commercial basis. As farmers do not have much cash income and often are not willing to pay for advice, this is not

an easy task. Most of the income from the BDSs comes from contracts with donor organizations: a client based relationship with clearly described tasks and results.

If we look at support services in relation to dairy development, we can conclude without any doubt that there is a need for information and advice. Most households received a few cows during the process of privatization, but that did not make them dairy farmers and managers. Their production system is based on tradition and minimizing risks. If the dairy sector is to develop further, there will be a need for more professional and larger dairy farms. The new generation is not eager to get involved in subsistence farming, but might be attracted if dairy farming is seen as a business.

There are limited government extension services, but there are government veterinarians. However, most of these field-based veterinarians get their main income from providing private services. This means that in practice there is no effective government service in support of dairy development. Therefore support services will have to be provided by the private sector.

During the mission discussions were held with three private organizations: Agro Information Center (AIM), Humanitarian and Social Support Center (UMID) and Janub Agribusiness Center (JAC).

5.2 Agro Information Center

AIM - as it reads on their website- is a national, non-sectarian, non-political, not-for-profit Non-Governmental Organization (NGO). It was registered with the Ministry of Justice of the Republic of Azerbaijan on November 16, 1999. AIM's overall objective is to improve productivity and self-reliance of newly established private farmers through agricultural extension, information dissemination, and the establishment of institutional infrastructure supporting the rural sector.

AIM provides demand-driven extension services for people engaged in crop production and livestock farming. AIM's activities and staffing are supported by EED (Church Development Service) from Germany and ICCO (Interchurch Organization for Development Cooperation) from the Netherlands. The USAID AIM labs will be discussed in section 5.6.

AIM provides information services which help farmers to solve problems at their own level and from their own resources. One approach has been the training of field advisors (AAs) and reportedly this has increased farm productivity and living standards. A major challenge was to change the reluctance to pay



for advice provided by the AAs. However, progress has been made in this respect. The AIM website shows a large number of leaflets that have been produced for a wide variety of crops and livestock production.

5.3 Humanitarian and Social Support Center

UMID SSD is an independent national NGO and their website gives the following information: UMID helps the marginalized segment of the population, in resolving their basic needs, solving their social problems, improving the education condition, developing communities, creating economic opportunities for the people etc.'. UMID was established in 1997 and registered at the Ministry of Justice of the Republic of Azerbaijan in 1998. UMID works together with various donor organizations and has offices in Baku, Sumgait, Kurdamir and Ganja.

UMID's main focus is on education, community development and strengthening capacity for self-help, business development and the coordination of logistical support to UNHCR programs in Azerbaijan. UMID's staff has participated in international trainings, conferences and forums to strengthen its capacities. The topics covered by them are: Capacity Building, Technical Safety, Ethic and Conflict Management.

Presently UMID is implementing a dairy project funded by USAID and BP (Community Based Support to Producers of Dairy Products) in Yevlakh, Samukh, Goranboy, Goygol, Shamkir, Kurdamir and Ujar. The project includes information supply in 50 communities and training on animal care, milk storage, entrepreneurship and other subjects related to milk production in selected areas. The project will also focus on the establishment of dairy farmer associations. The project should lead to higher sales of milk and increase of income for dairy farmers.

5.4 Janub Agribusiness Center

JAC is a business consulting company located in Lankaran, specializing in consulting services for small, medium and large businesses, banks and investment companies. Its primary services include market feasibility studies, business plans, operational reviews, re-engineering, strategic planning, seminars and workshops. JAC was founded as a regional branch of the Azerbaijan Agribusiness Center (AAC) in 2007 with support of USAID.

In 2009, the southern branch of AAC formally restructured as Janub Agribusiness Center (JAC) and continues to provide the above services in six districts of southern Azerbaijan. JAC implements projects for a number of donor organizations and NGOs, one of which was the dairy development project under PSCEP. JAC's mission is to provide its clients with business services that help them become more successful and to become a leader in consulting to small and medium sized businesses.

5.5 Services for Dairy Development

Although all three service companies are or were involved in dairy production, we cannot say that they are dairy specialists. UMID's strength is in community development and JAC is mainly involved in business development. AIM appears to be the organization that has most affinity with agricultural development.

In dairy development there are three main aspects that stimulate production and quality improvement:

1. A reliable market for raw milk – this can be the formal processing industry or the informal market outlet (direct sales, traders, small processors);
2. A milk price that allows for investments and provides an incentive for development; and
3. A payment system for raw milk that rewards higher quality milk and discourages poor quality standards.

Technical advice alone, even if the recommendations are sound, has little effect if the above three conditions are not fulfilled. Therefore the dairy industry plays a crucial role in dairy development: dairy plants and farmers always have to work together, even if they have different views on what is the best raw milk price. One cannot live without the other and a fair compromise is needed.

One of the new plants has employed its own extension staff, others make use of the programs offered through donor organizations. They all will provide advice on nutrition, health, housing and management, but time was too short to assess the technical and economic value of their advice. Does each of the service providers know which measures actually give direct benefit to the farmers: are the conditions right for certain measures? Does the investment in better housing result in more milk and a higher price or is the improvement not visible in the financial returns at the end of the day. Does it pay to feed concentrates or does the cost not cover the extra benefits? Unless these questions are clearly answered technical advice is risky.

The present payment systems, although formally based on quantity and fat content, do not encourage farmers to invest in better hygiene and quality control. The collector gives them all the same price, so there is no incentive. Therefore changes have to come from the top (the buyer) and not from a village community, unless this community has enough milk to attract buyers that are willing to pay a premium price for quality.

Discussing fodder quality and feed rations with farmer, advisor and AIM representative.



Another problem for extension staff is that they have very few or no examples of modern dairy farming to draw experience from. There is a need for model and demonstration farms, where extension messages can be tested and farmers can see what can be achieved.

When selecting farms for demonstration the following criteria should be considered:

- Willingness to adopt new technologies, follow advice and act as demonstration farm;
- The farm should act as a model for future Azeri dairy farms;
- The farmer/owner should be interested in applying AI and the livestock should have potential for production improvement by means of AI;
- The farm should have a minimum of 5 – 10 milking cows;
- The production performance should be above Azeri average (milk production, fodder production), but compatible with neighbouring dairy farms;
- The financial state of affairs should allow investments by the owner directed to the improvement of the dairy farm; and
- The location of the farm should be convenient (roads to the farm should be reasonable and it should be conveniently located).

In addition to the valuable data that can be obtained from demonstration farms, they can also be used for the practical training of extension staff and farmers.

Training materials have been developed by all three service providers, but time was too short to make a clear assessment of the practical value of these materials. The impression was given that the information on milk production was fairly theoretical and not properly adapted to the level of the farmers and/or extension staff. A detailed assessment and, if necessary, modification of training materials is needed before new assignments are given to any of the service providers.

5.6 Feed Laboratory

AIM, with support of USAID, established a Soil and Feed Laboratory in Agjabedi in 2008. The laboratory offers employment to 3 persons and has to cover its operational costs since the beginning of 2011. The number of soil samples that are received has showed a positive increase from 200 in 2008 to 1100 in 2010. Feed testing has only just started and demand is limited. To cover all operational costs at least 2000 - 2500 samples have to be analysed each year.

Feed laboratory established by AIM, with USAID support. Translation of test results to advice on cattle rations still needs to be improved.

Feed analysis covers dry matter content, crude protein, crude fibre, crude fat, Calcium and Phosphate. The price for a total feed analysis is 18 AZN for private farmers and 36 AZN for companies and other organizations. In addition transport cost for sample taking can be charged. Based on the test results the extension staff of AIM prepares a feed advice and calculates rations for a specific level of production.



A simple cow ration is based on DMI (dry matter intake) and a balanced supply of protein and energy to meet the specific requirements of the animal. Energy in the feed is provided from crude fibre, sugars, starches, fats and protein. Digestibility of the feed is an important factor to calculate the energy (in Mcal/kg). Especially green fodder (hay and silage) can vary substantially in digestibility and feeding value. Knowing the feeding value of the fodder is very helpful in deciding what type of concentrate is needed to match requirements. Feeding value of grains and various by-products are more stable and their values can be obtained from existing tables.

The feed advice as given by AIM to the farmers is not easy to read or understand, because the basic calculation from test results to energy content are missing. A very informative and clear article by R. Belyea 'Forages for Cattle: New Methods of Determining Energy Content and Evaluating Heat Damage' has been translated and handed over to AIM as a first step to assist them with improving their service. More technical support will be needed to ensure that the farmers receive practical advice on animal nutrition and a more effective use of the laboratory.

5.7 Conclusions

Concluding we can say that there is a need for advisory services, but that commercial services are not easy to achieve. During the past 20 years we have seen that in most developed countries extension services have been privatized as the income of farmers would allow them to pay the full costs of such services. The result was that many of the services were taken over by input suppliers (e.g. feed industry, fertilizer suppliers) and that only a demand for specific services remained (e.g. barn construction and guidance, financial and tax services). The average Azeri farmer cannot yet afford individual advice on a commercial basis and support will remain needed.

A more cost-effective approach is extension through group advice. Many farmers have the same scale of production, face similar problems in production and can make use of the recommendations. For practical advice meetings can be organized at a farm, preferably one of the demo farms. Dairy plants can support the advisory work through central procurement of essential inputs and feeds.

6 Trade Barriers

6.1. Introduction

Throughout the report mention has been made of trade barriers that have a negative impact on in dairy development and in this section we will provide an overview of some formal and informal barriers that need to be addressed. At the same time we repeat that for the dairy processing industry the main challenge is a regular and sufficient supply of good quality milk. Without milk there can be no growth in marketing and sales.

Identified trade barriers related to dairy production can be categorized as:

- Feed and Fodder production
- Breed Improvement
- Animal Health and Food Inspection
- Contracting Services and Input Supply

6.2 Feed and Fodder Production

In addition to the negative effects of lost harvest due to the floods of 2010 and a general increase in world-market prices for feeds, the Azeri farmers are facing:

- High prices for compound feed because the high protein elements (e.g. soybean meal, sunflower meal), premixes and corn are mostly imported. On these feed ingredients custom duties have to be paid, with 'informal duties' on top of that;
- There is a monopoly in edible oil production, which discourages local production of these items as the monopolist company mostly processes non-refined oil imported from the Ukraine;
- The small amount of edible oils produced is being priced in accordance with the imported product: just a few AZN/ton less than the imported products to maximize profits;
- Direct import by producers is unattractive because of corruption (as almost every imported item is under the monopoly of someone, imports by others end up much more expensive and are thus made impossible);
- Import of premixes, soybean meal and sunflower cake is usually done by companies that are unofficially authorized;
- Wheat import is under monopoly too but it is possible to find local wheat, which is mostly animal feed quality; and
- Hybrid seeds are hard to find and very expensive, even though the government recently announced that these seeds will be exempted from import duties and VAT.

6.3 Breed Improvement

Breed improvement takes place through artificial insemination and the supply of pedigree cattle. The situation with both approaches gives reason for concern.

- The establishment of the local AI-Center had a direct effect on the sales of imported semen as the Ministry of Agriculture attaches more importance to cost recovery of its own product than to the development of a free market and the wishes of the clients. The letter of MoA to Agro Lider has been attached as Appendix 7 for further background information. Meanwhile the Ambassador of the Netherlands has been asked for support, as the imported semen is supplied by CRV, a Dutch breeding organization.
- Pedigree cattle were imported by Agroleasing at 4000 Euro per heifer and even with 50% subsidy their sales price is close to normal market value.

6.4 Animal Health and Food Inspection

Animal disease control and food inspection are not only important for health protection of the Azeri population, but also influence the export potential of animal products.

- In many countries farmers receive compensation for animals that have to be slaughtered because of contagious diseases. In Azerbaijan the State Veterinary Service can slaughter a suspected animal for investigation without paying any compensation. The effect is that farmers do not report sick animals and contagious diseases may spread beyond control.
- Many vaccines and medicines that are widely used in Azerbaijan are not registered and therefore cannot be traded officially. They are imported without license or quality control. The importers may not follow the required procedures for storage (cold chain) and sell medicines that are not effective. This not only causes extra costs for the farmer (cost for medicines, loss of production) but also causes a danger for human health.

How safe are the products that are offered for sale if there is no effective food inspection?



6.5 Contracting Service and Input Supply

For small farmers it is not economical to invest in farm machinery. A better option is to make use of contracting services and the government decision to establish these services throughout the country was positive. A similar approach was followed for the supply of basic inputs, such as seeds and fertilizers. Officially all these services are provided at subsidized prices. Unfortunately the practical implementation of these services provided through Agroleasing receives quite some criticism, such as:

- Agroleasing charges normal market price for these services, but should give these services cheaper as they use state funds for their investments in farm machinery;
- In peak times it is hard to get service from them and rich farmers or friends are served first;

- Fertilizer imports are under monopoly of Agroleasing and even with 50% subsidy farmers pay market prices;
- There is hardly any choice of fertilizer and what is available does not always match soil requirements.

The components 1 and 3 of the ACT project will be directly involved in identifying trade barriers and try to find ways to solve these constraints. Formal barriers can be solved through better legislation and supportive government decisions. An example of such a supportive measure is Decision 17 on the exemption of import duties and taxes for imports of production inputs (see Appendix 6).

The main challenge is to remove the informal trade barriers, caused by corruption and monopolies. It is known that only a percentage of what is actually being imported is declared to save costs. Some studies show that Turkish and major European export figures to Azerbaijan are 4-5 times higher than the formal Azerbaijan import figures.

On the other hand we should not forget that there is an enormous potential for business development in Azerbaijan. The oil-revenues make it possible to invest and the country has a need for technical know-how, management skills and all kinds of equipment and inputs to modernize agricultural production.

7 Conclusions and Recommendations

The overall conclusion is that with the new investments in milk processing, there is a strong impulse to develop the dairy sector as a whole. The demand for raw milk will increase and assuming that farmers will receive an attractive price for their milk, they will be motivated to invest in improved breeds, better nutrition, higher milk quality and more animals per farm. This makes it very attractive for projects and businesses to get involved in this sector.

The sudden increase in processing capacity will require coordination from all key-players to monitor developments, to share information and to decide on specific action plans, especially to improve milk quality standards and to reduce the strong seasonality in raw milk supply.

The continued support of the government will be needed, as facilitator and creator of a conducive environment for private sector development. This will require regular meetings between government and dairy sector key-players to set priorities for solving specific issues, discuss trade barriers (e.g. VAT on imported feed and market restrictions for private AI services) and reach agreement on approach (tasks private sector and government).

The new developments in dairy production will require technical advice and support. This can be provided by existing service providers, veterinarians and advisors hired by the dairy plants. A constraint is that extension staff has not been able to obtain much experience on modern dairy farming, as there are only very few high productive farms in the country and no practical training centers to develop new skills. Training of trainers will be needed to meet the requirements in skills and know-how in the field.

The marketing of dairy products is limited by the lack of raw milk: the dairy processing industry cannot meet demand. The modern dairies already know what products are in demand and how to compete with the imported products (import substitution is the main target, but export of white cheese is an option). The main challenge for the dairies is to obtain a regular supply of raw milk which reaches basic quality standards. This will require programs on:

- **Animal Nutrition:** dairy husbandry is based on a low input-low output system. Cattle feeding is based on grazing natural grasslands in winter supplemented with poor to medium quality hay and small quantities of wheat bran. A well balanced feed supply is essential to increase milk yields - both forage quality and availability of compound feeds need to be improved.

- **Breed Improvement:** the average yield per cow is less than 1200 liters per year (compared to > 6000 in the EU) and there is a need to improve the genetic capacity for milk production. This can best be achieved through the use of artificial insemination, but the present AI services need to be strengthened to be effective.

Commercial AI Services are an effective way to improve the genetic quality of the local cows.



- **Milk Quality:** raw milk quality does not meet international standards, which makes it difficult for the processing industry to produce high quality dairy products and to compete successfully with imported products. A first step for the dairy industry is to discuss minimum raw milk quality standards, milk acceptance and operation procedures, as well as payment systems (not prices) which are based on test results on quality.

The small scale of farming and the fact that most households consider dairy production as a side-activity make it difficult to reach higher yields and better quality. The development of more professional dairy farming should be stimulated. This should be done by identifying farmers that are eager to develop dairy farming as a business and are willing to function as demo farms. Through technical advice and (financial) support these farms can reach more professional standards of production. The results from the demo farms are to be used by extension staff to train other milk suppliers.

Farm development requires investments, but credits are difficult to find and expensive (interest rates for micro-credits are > 25%). The government has established the Agroleasing company to provide support in this area and recently announced further support on credits at acceptable conditions. However, the present activities of Agro Leasing are not considered very effective: even with the subsidies the prices for inputs are close to market value. It might be more attractive if the dairy plants organize support for their milk suppliers and thus create long-lasting relations.

The action plan that was prepared during the mission reflects the above conclusions and recommendations. In summary we can say that possible project interventions could work towards:

1. Preparation of a baseline on milk quality and quantity supplied per farm (in cooperation with the dairies);
2. Agreement between the dairies on the approach for milk collection and quality control (minimum standards, testing system, payment system, need for contracts, additional services provided through the dairy);
3. Selection of service providers and provision of training to ensure that extension messages lead to higher income for the farmer and better/more milk for the dairy;
4. Provision of STTA on specific needs such as guidance on overall sector development and coordination between key-players, training of extension staff and inseminators, support to AIM on feed analysis and rationing;
5. Removal of trade barriers (e.g. market development of AI services, availability of high quality seeds for fodder crop production, monopolies in feed supply)
6. Development of input supply services (identification of needs and potential providers, organization of inputs through the dairy plants)
7. Availability of credits at acceptable conditions (at reduced interest rates through guarantees or direct government support)
8. Creation of model/demonstration farms to support extension work and to use for promotional activities.

There still remains very much to be done to develop the dairy sector, but it is very encouraging to see the investments made in expanding processing capacity and the growing attention that is given to agricultural development in general.

APPENDIX 1

List of Persons Met

Persons Met

I would like to thank all the persons that made this mission possible and who were very helpful to provide information, to have open discussions on development issues and supported us in formulating our recommendations. I especially want to thank Elnur Sofiyev for organizing all the meetings and arranging the field trips in such a splendid way.

Melani Schultz	Chief of Party, ACT Project
Ed Beaman	Team Leader Component 3, ACT Project
Elnur Sofiyev	Business Development Specialist, ACT Project
Ziyad Aliyev	Translator, ACT project
Keith Simmons	Country Manager USAID
Sheila Young	Director Economic Growth Office, USAID
Stephen F. Little	Private Enterprise Development Officer, USAID
Arjen Uijterlinde	Ambassador, Embassy of the Kingdom of the Netherlands
Chingiz Faracov	Head Breeding Department, MoA
Ramiz Ismayilov	Advisor/Auditer Milk-Pro Ltd
Ilham Hasanov	Deputy Director, Milk-Pro Ltd
Soltan Bayramov	Procurement R & D Specialist, Azersun
Vahid Tanhaei	Dairy Manager, Azersun
Israil Iskenderov	Executive Director UMID
Aydin Azizov	Deputy Chairman, Agroleasing
Nazakat Bayverdiyeva	Deputy Director/External Relations, AIM
Yashar Isgandarov	Program Coordinator/Trainer AIM
Maharram Hagverdiyev	Director Soil & Feed Laboratory, Agjabedi

Alovsat Abdulov	Trainer, AIM
Eldar H. Jafarov	Chairman Management Board, CredAgro
Cem Kurt	General Manager ATENA, Agjabedi
Asaf Namazov	General Manager Bilasuvar Agro
Tofiq Rizayev	Manager B-Agro MCC, Saatli
M. Zeki Ashchi	General Director Pal Süd, Lankaran
Behzat Boz	Production Advisor Pal Süd, Lankaran
Elkhan Sadigov	Manager Pal Sud MCC, Boladi
Teyyub Rizayev	Milk Collector Pal Sud
Mobil Penjaliyev	Food Processing Specialist, Janub AgribusinessCenter, Lankaran
Andrew Pospelovsky	General Manager AccessBank
Saleh Guliyev	Chairman Agro Lider LLC
Fariz Hacıyev	Manager Agro Lider LLC
Nariman Dunyamaliyev	Inseminator/Trainer, Absheron
Elyar Jafarov	Dairy farmer (imported heifers), Lankaran
Novruz Hasanov	Dairy farmer, Agcabedi

APPENDIX 2

References

References

Private Sector Competitiveness Enhancement Program (PSCEP): Dairy Sector Action Plan, June 2009

Private Sector Competitiveness Enhancement Program (PSCEP): Progress Reports 2010 and Annual Report 2009

Anonymous: Azerbaijan Beef and Dairy Value Chains, Case Study

GIEWS Country Briefs, Azerbaijan, FAO Publication, November 2010

State Statistical Committee Azerbaijan and Statistical yearbook 2010

Eldar Kosayev and Yagub Guliev: Country Pasture/Forage Resource Profiles Azerbaijan - FAO Publication

Ministry of Agriculture Azerbaijan: Local Animal Species of Azerbaijan, 2004

International Dairy Consultants: Set-up of Artificial Insemination in Azerbaijan, Final Report, 2002

Agroleasing Brochure, 2008

R. Belyea and R. Ricketts: Forages for Cattle: New Methods of Determining Energy Content and Evaluating Heat Damage, University of Missouri, 1993

D. Cash and F. Bowman: Alfalfa Hay Quality Testing, Plant and Soil Science Department, Montana State University

OMAFRA Information Sheet: Measure and Manage, Understanding Feed Analysis Terminology

Financial Standards Foundation: Country Brief Azerbaijan, April 2010

Azerbaijan Business Center: Minimum Consumer Basket Structure, April 2009

Reportlinker: Dairy in Azerbaijan, October 2010

FAO publications: Faostat

APPENDIX 3

Milk Production per Rayon

Milk production, tons.

	2000	2005	2006	2007	2008	2009
Total on Republic	1 031 114	1 251 935	1 299 509	1 341 278	1 381 625	1 433 114
Baku city	2 941	3 722	3 834	3 833	2 980	3 110
Absheron economic region	15 419	29 945	35 037	35 085	36 444	38 457
Kyrgyz region	4 053	4 150	4 711	4 235	5 209	5 606
Absheron region	11 086	25 201	29 714	30 241	30 846	32 280
Sumgait city	280	594	612	609	389	571
Ganja-Gazakh economic region	120 569	163 766	172 072	182 069	186 336	193 289
Ganja city	466	535	541	350	432	456
Gazakh region	15 696	16 500	16 830	17 170	17 282	18 359
Agstafa region	8 940	10 512	10 852	10 902	11 047	11 072
Tovuz region	18 320	22 830	23 424	24 852	25 532	25 839
Shamkir region	20 793	33 425	35 023	36 110	36 770	38 619
Gedabey region	13 836	20 180	23 922	24 740	25 122	25 499
Dashkesen region	16 738	19 574	20 162	19 033	19 025	19 032
Samukh region	8 464	11 094	11 113	12 850	13 032	13 106
Goygol region	5 692	14 471	15 538	20 324	22 354	22 427
Goranboy region	11 624	14 645	14 667	15 738	15 740	18 880
Sheki-Zagatala economic region	121 143	135 753	139 956	142 364	150 496	152 121
Balaken region	14 832	13 964	14 040	14 086	14 107	14 115
Zagatala region	29 796	36 862	37 305	37 753	38 516	39 657
Gakh region	16 015	9 215	9 498	9 625	9 636	9 646

Sheki region	27 874	35 733	38 763	40 242	47 273	47 602
Oghuz region	11 346	15 476	15 477	15 488	15 491	15 493
Gabala region	21 280	24 503	24 873	25 170	25 473	25 608
Lenkaran economic region	130 900	156 945	159 156	161 676	163 766	167 571
Astara region	12 739	16 382	17 182	17 918	18 620	19 365
Lenkaran region	16 754	22 298	23 235	24 235	25 297	26 410
Lerik region	12 638	13 745	13 748	13 760	13 768	13 776
Yardymly region	9 719	11 999	12 121	12 781	12 865	13 192
Masally region	27 446	43 524	43 839	43 942	44 155	44 185
Jalilabad region	51 604	48 997	49 031	49 040	49 061	50 643
Guba-Khachmaz economic region	93 046	109 511	110 622	111 730	112 012	114 200
Gusar region	20 774	22 258	22 259	22 260	22 262	23 950
Khachmaz region	26 637	34 270	35 161	36 005	36 185	36 511
Guba region	29 527	34 450	34 502	34 610	34 628	34 648
Shabran region	10 408	10 819	10 820	10 821	10 889	11 068
Siyazan region	5 700	7 714	7 880	8 034	8 048	8 023

Aran economic region	390 846	450 461	466 941	485 461	504 081	532 221
Geychay region	15 994	22 235	22 550	23 180	23 286	23 360
Beylagan region	19 818	22 725	23 236	23 450	26 733	30 360
Agjabedi region	40 734	47 750	47 847	48 014	48 040	48 072
Barda region	30 311	38 000	40 100	42 200	44 100	46 300
Neftchala region	19 180	18 736	17 950	18 855	19 999	20 000
Bilasuvar region	13 314	14 535	14 577	14 607	14 623	22 066
Salyan region	30 561	32 994	36 440	40 192	40 510	40 621
Yevlakh region	38 114	26 609	26 716	27 291	29 407	29 496
Mingechevir city	413	636	655	657	1 182	1 186
Agdash region	18 468	26 912	28 235	29 335	30 285	32 417
Ujar region	22 003	23 447	25 479	26 702	29 055	29 593
Zardab region	16 991	20 810	21 069	21 346	21 605	21 663
Kurdamir region	20 426	23 071	23 450	23 567	24 038	24 446
Imishly region	21 066	28 438	30 696	30 971	31 214	40 932
Saatly region	22 595	31 540	32 171	35 486	36 381	36 523
Sabirabad region	49 988	58 698	62 416	66 116	69 918	71 270
Hajigabul region	10 178	12 480	12 484	12 620	12 670	12 681
Shirvan city	692	845	870	872	1 035	1 235
Yukhari Garabagh economic region	29 510	47 555	49 208	51 148	52 302	54 927
Jebayil region	2 787	3 600	3 616	3 663	3 675	4 248
Fizuli region	5 926	7 750	7 850	7 920	6 420	6 757
Agdam region	10 994	21 941	22 930	23 189	25 649	26 726
Terter region	7 328	10 430	10 670	10 740	10 850	11 280

Khojaly region	566	1 095	1 402	2 878	3 150	4 200
Shusha region	732	881	881	898	898	903
Khojavend region	1 177	1 858	1 859	1 860	1 660	813
Kelbajar-Lachin economic region	11 323	10 615	15 127	17 074	19 634	20 979
Kelbajar region	3 273	5 264	5 778	6 771	8 010	8 837
Lachin region	7 887	5 045	9 047	10 037	11 391	11 907
Gubadly region	152	281	270	225	190	191
Zangilan region	11	25	32	41	43	44
Daghlig Shirvan economic region	61 169	78 841	79 692	80 584	81 532	82 310
Gobustan region	9 685	12 760	12 920	13 560	14 040	14 545
Ismayilly region	16 369	23 106	23 148	23 216	23 474	23 491
Agsu region	15 115	22 724	23 261	23 302	23 347	23 396
Shamakhy region	20 000	20 251	20 363	20 506	20 671	20 878
Nakhchivan economic region	54 248	64 818	67 865	70 254	72 042	73 929
Sadarek region	1 450	1 459	1 522	1 576	1 600	1 630
Sherur region	18 950	21 265	22 337	23 127	23 690	24 512
Babek region	12 300	10 594	11 128	11 573	11 872	11 398
Nakhchivan city	-	640	673	694	710	1 250
Shakhbuz region	10 348	11 672	12 149	12 565	12 918	13 296
Julfa region	7 350	7 588	7 944	8 192	8 441	8 691
Ordubad region	3 850	4 445	4 626	4 805	4 952	5 100
Kengerli region	-	7 155	7 486	7 722	7 859	8 052

APPENDIX 4

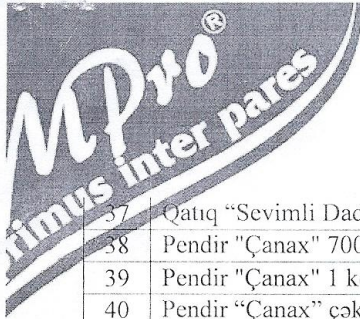
Price List and Product Range M-Pro Dairy Plant



European Bank
for Reconstruction and Development

“Milk-Pro” MMC-nin istehsal etdiyi məhsulların satış qiyməti

Nö	Məhsulun adı, yağılığı və çəkisi	Mağazalara verilən qiymət	Tövsiyyə olunan qiymət
1	Xama "Kaunasskaya" 25% 200qr	1,10	1,20
2	Xama "Sevimli dad" 10% 200qr	0,40	0,50
3	Xama "Sevimli dad" 15% 250 qr	0,70	0,80
4	Xama "Qarmoniya" 15% 500 qr	1,30	1,50
5	Ayran "Sevimli dad" 1,4% 1L	0,70	0,80
6	Ayran "Sevimli dad" 1,4%-300 qr	0,35	0,40
7	Laban 1L	0,75	0,90
8	Doyran "Sevimli dad" 1,4% 500 qr	0,77	0,90
9	Dovğa "Sevimli dad" 2,6% 1L	1,30	1,50
10	Dovğa "Sevimli dad" 2,6%-300 qr	0,50	0,60
11	Kəsmik "Yağlı" 18% 200 qr	1,40	1,60
12	Kəsmik "Yağsız" % 200 qr	0,90	1,00
13	Kəsmik "Dietik" 11% 200 qr	0,80	0,90
14	Kəsmik üzümlü 20% 200 qr	1,40	1,60
15	Kəsmik qaysılı 20% 200 qr	1,40	1,60
16	Kəsmik Yağlı "Sevimli Dad" 18% 200 qr	1,15	1,30
17	Kəsmik üzümlü "Sevimli Dad" 20% 200 qr	1,15	1,30
18	Kəsmik qaysılı "Sevimli Dad" 20% 200 qr	1,15	1,30
19	Kəsmik Pəhriz 200 qr	0,48	0,60
20	Kəsmik "Sevimli Dad" dietetiki 0,3% 200 qr	0,90	1,00
21	Kəsmik "Sevimli Dad" 9% 200 qr	1,00	1,10
22	Kefir "Osetinskiy" 1 litr	1,30	1,50
23	Qaymaq 30%-150 qr	0,90	1,00
24	Şor 200qr	0,80	0,90
25	Süd 3,2% 1L	0,87	1,00
26	Sterilizə olunmuş süd "Sevimli dad" 0,1%CA+1 L	1,00	1,10
27	Sterilizə olunmuş süd "Sevimli dad" 1,5%-1 L	1,00	1,10
28	Sterilizə olunmuş süd "Sevimli dad" 2,5%-1 L	1,00	1,10
29	Sterilizə olunmuş süd "Sevimli dad" 3,4%-1 L	1,15	1,30
30	Sterilizə olunmuş süd "Sevimli dad" 3,5%-1 L	1,15	1,30
31	Qatıq "Sevimli dad" 200qr	0,32	0,40
32	Qatıq "Sevimli dad" 500qr	0,78	0,90
33	Qatıq "Sevimli dad" 1000qr	1,40	1,60
34	Qatıq "Sevimli dad" 1500qr	1,80	2,00
35	Qatıq "Sevimli dad" 3 kq	3,10	3,40
36	Qatıq "Camış" 800 qr 6%	1,40	1,55



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for Reconstruction and Development

37	Qatıq "Sevimli Dad" Light 2,5% 500 qr	0,60	0,70
38	Pendir "Çanax" 700qr	3,95	4,40
39	Pendir "Çanax" 1 kq	5,10	5,60
40	Pendir "Çanax" çəki ilə (7 kq)	4,70	5,20
41	Pendir "Sevimli Dad" 0,5 kq	2,80	3,00
42	Pendir "Sevimli Dad" 3,5 kq	4,70	5,20
43	Yağ "Kərə" 82% 100qr	0,70	0,75
44	Yağ "Kərə" 82% 200qr	1,40	1,50
45	"Sevimli Dad" kərə yağı 72% 1 kq (çəki ilə)	5,30	5,70
46	"Sevimli Dad" kərə yağı 82% 1 kq (çəki ilə)	7,00	8,00
47	Nəhrə yağı 72% 100qr	0,58	0,65
48	Nəhrə yağı 72% 200qr	1,15	1,40

"Milk-Pro" MMC-nin
satış departamentinin müdiri:

Həsənov İ.İ



APPENDIX 5

Price List Agroleasing Contract Work

of the services rendered to producers of agricultural products by organizations of
AGROLIZING QJSC
PRICE LIST

N	Title of works	Rendered service, unit amount, manat
1	Grain cutting from area of 1 hectare	27,00
2	Circular plastering to area of 1 hectare	8,00
3	Loosen of area of 1 hectare by rotation plaster	16,00
4	Cultivation works in inter-row tilling	10,00
5	Seed (cotton) sowing works in area of 1 hectare	12,00
6	Carrying out the tilling of 1 hectare in depth 22-27 cm (average resistant soil)	25,00
7	Tilling works in depth more than 27 cm in irrigated and hard soils	27,00
8	Tilling works in depth more than 22-23 cm in not-irrigated and soft soils	24,00
9	Smoothing works before sowing	7,50
10-1	Medicine splash with manual splash to area of 1 hectare	10,0
10-2	Medicine splash with ventilator splash to area of 1 hectare	12,00
11	For daily work load of hole digger (120 holes/day)	60,00
12	Pressing of grass and straw (1000 pieces compact in 1 day)	100,00
13	Reaping of fodder crops of 1 hectare by self-propelled grass-mowing machine	22,00
14	Reaping of fodder crops of 1 hectare by rotor grass-mowing machine	14,00
15	Sowing works of seeds of grain-crops to area of 1 hectare	13,00
16	Sowing of mineral fertilizer to area of 1 hectare	8,00
17	Cotton-harvesting from the area of 1 hectare	60,00
18	Gathering of beetroot from the area of 1 hectare	60,00
19	Planting of potato to the area of 1 hectare	50,00
20	Gathering of potatoes from the area of 1 hectare	40,00

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APPENDIX 6

Decision of Cabinet of Ministers On Exemption of Duties and Tax

DECISION

No. 17

OF THE CABINET OF MINISTERS

OF THE REPUBLIC OF AZERBAIJAN

on additions to the decision no. 91, dated April 22, 1998 "on the rates of custom duties on export-import operations in the Republic of Azerbaijan" and decision no. 11 dated January 31, 2005 "on the list of VAT free goods imported to the Republic of Azerbaijan" of the Cabinet of Ministers of the Republic of Azerbaijan

Baku city, January 25, 2011

on additions to the decision no. 91, dated April 22, 1998 "on the rates of custom duties on export-import operations in the Republic of Azerbaijan" and decision no. 11 dated January 31, 2005 "on the list of VAT free goods imported to the Republic of Azerbaijan" of the Cabinet of Ministers of the Republic of Azerbaijan

For strengthening state support to the development of non-oil sector and encouraging application of new and modern technologies, taking into consideration the suggestion of the Ministry of Economic Development of the Republic of Azerbaijan negotiated with the Ministry of Finance of the Republic of Azerbaijan, Ministry of Agriculture of the Republic of Azerbaijan, Ministry of Taxes of the Republic of Azerbaijan, Ministry of Justice of the Republic of Azerbaijan, State Customs Committee of the Republic of Azerbaijan; the Cabinet of Ministers of the Republic of Azerbaijan hereby resolves:

Sub-clause 4.17 with the following content to be added to the decision no. 91, dated April 22, 1998 "on the rates of custom duties on export-import operations in the Republic of Azerbaijan" of the Cabinet of Ministers of the Republic of Azerbaijan (Compilation of laws of the Republic of Azerbaijan, 1998, no. 4, Article 299, no. 8, article

550, no. 10, Article 639; 1999, no. 2, Article 150; 2000, no. 5, Article 374, no. 7, Article 559, no. 8, III book, Article 643, no. 9, Articles 690, 699, 700, no. 10, Article 770; 2001, no. 4, Article 289, no. 8, Article 561; 2002, no. 4, II book, Articles 209, 212; 2005, no. 1, Article 56; 2006, no. 2, Article 180, no. 4, Article 367, no. 7, Article 652; 2008, no. 7, Articles 672, 687; 2009, no: 9, Articles 742,744, no. 12, Articles 106-1, 1071~2010, no. 7, Article 706; decision no. 232, dated December 13,2010 of the Cabinet of Ministers of the Republic of Azerbaijan):

"4.17. "With the view of promoting production in non-oil sector, foreign-economic activity nomenclature (FEA NC) (attached) of the commodities exempted from import duties?" to be approved"

2. Sub-clause 1.20 with the following content to be added to the decision no. 11, dated January 31,2005 of the Cabinet of Ministers of the Republic of Azerbaijan "on the list of VAT free goods imported to the Republic of Azerbaijan" (Compilation of laws of the Republic of Azerbaijan, 2005, no. 1, Article 55, no. 4, Article 378, no. 10, Article 980; 2006, no. 2, Article 180, no. 4, Article 367, no. 7, Article 652; 2007, no. 6, Article 700, no. 7, Article 743, no.12, Article 1355; 2008, no. 4, Article 325, no. 7, Articles 672, 687, no. 11, Article 1036; 2009, no. 1, Article 25, no. 4, Article 291, no. 9, Articles 742, 744, no. 12, Article 1071; 2010, no. 4, Article 356, no. 7, Article 706; Decision no. 231, dated December 3,2010 and Decision no. 232, dated December 13 of the Cabinet of Ministers of the Republic of Azerbaijan:

"1.20 Foreign economic activity nomenclature (attached) of commodities exempted from VAT with the purpose of promoting production in non-oil sector to be approved".

3. This decision comes into force as of March 1, 2011 and is valid for 3 years.

A. Rasi-zadeh

Prime minister of the Republic of Azerbaijan

Approved by decision no. 17 dated January 25, 2011 of the Cabinet of Ministers of the Republic of Azerbaijan

Foreign economic activity nomenclature of the commodities (FE A NC) exempted from import duties with the view of promoting production in nonoil sector.

Commodity code according to nomenclature of foreign economic activity	Commodity name
From group 01 0102 10 0104 10 1000 010420 1000 0105 11	Pedigree clean horned cattle Pure-bred pedigree sheep Pure-bred pedigree goats Breeding (sire-maternal grandsire) fowls with the weight not exceeding 185 g (<i>Gallus domesti cus</i>)
From group 12 1201 00 1000 120600 1000 1209 100000 120922 1000 1209296000	Soy beans for sowing Sunflower seeds for sowing Sugar beet seeds for sowing Red trefoil clover seeds for sowing (<i>Trifolium pretense</i> L.) Mangel seeds for sowing (<i>Beta vulgaris</i> var.alba)
From group 31	Fertilizers
From group 38	Insecticides, rodenticides, fungicides, herbicides used in agriculture, agents against budding and regulating budding of plants (except for the disinfectant agents shown in good

3808	position 3808 94)
From group 84	Drying machines for agricultural products
841931 0000	Milk skimmers
8421 11 0000	Devices and equipment for filtration and purification of the water used in food industry
8421 21 000 1	Equipment for washing and drying bottles and other utensils used in the production of food products
842220000 1	Parts of the equipment used in the production of food products
842290900 1	Irrigation facilities for agriculture and gardening; moveable facilities; dust scattering and dispersing designed to be coupled or trailed to tractors;
8424 81	Pneumatic elevators and conveyers specially intended for agricultural usage
8428203000	Loading equipment specially designed to be coupled to agricultural tractors
8428 90 710 0	Machines used in agriculture, gardening and forestry for land processing (except for rollers for cleaning lawns and sports grounds, classified in goods position 8432 80 000 0)
8432	Machines and mechanisms for gathering and beating agricultural plants, pressing devices, including presses for packing dry grass and hay in bales; grass and lawn mowing machines; machines for cleaning, sorting and calibrating eggs, fruits and other agricultural products, besides those listed under code 8437
8433 20	Milking facilities and devices, equipment for milk processing and reprocessing
8433 30	Equipment for agriculture, gardening, forestry, poultry farming, beekeeping and others together with mechanical and heating
8433 40	
8433510000	
8433 520000	
8433 53	
8433 59	
8433 600000	
8433 900000	
8434	
8436	
8437	

8438	<p>devices, including equipment for growing seeds;</p> <p>incubators and brooders for poultry farming</p> <p>Machines for cleaning, sorting and calibrating seeds, wheat and bean plants, equipment used in farms for flour milling industry and for processing wheat and dry beans, except for the equipment used in agricultural farm</p> <p>Equipment which is not enumerated and classified in other parts of this group and which is used for production and manufacture of food products and drinks, except for equipment for extraction and production of animal or non-evaporable plant oil or fat.</p>
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Approved by decision no. 17 dated January 25, 2011 of the Cabinet of Ministers
of the Republic of Azerbaijan

**Foreign economic activity nomenclature of commodities (FEA NC) exempted
from VAT with the purpose of promoting production in non-oil sector**

Commodity code according to nomenclature of foreign economic activity	Commodity name
From group 01 0102 10 0104 10 1000 010420 1000 0105 11	Pedigree clean horned cattle Pure-bred pedigree sheep Pure-bred pedigree goats Breeding (sire-maternal grandsire) fowls with the weight not exceeding 185 g (Gallus domesti cus)
From group 12 1201 00 1000 120600 1000 1209 100000 120922 1000 1209296000	Soy beans for sowing Sunflower seeds for sowing Sugar beet seeds for sowing Red trefoil clover seeds for sowing (Trifolium pretense L.) Mangel seeds for sowing (Beta vulgaris var.alba)
From group 31	Fertilizers
From group 38	Insecticides, rodenticides, fungicides, herbicides used in agriculture, agents against budding and regulating budding of

3808	plants (except for the disinfectant agents shown in good position 3808 94)
From group 84	Drying machines for agricultural products
841931 0000	Milk skimmers
8421 11 0000	Devices and equipment for filtration and purification of the water used in food industry
8421 21 000 1	Equipment for washing and drying bottles and other utensils used in the production of food products
842220000 1	Parts of the equipment used in the production of food products
842290900 1	Irrigation facilities for agriculture and gardening; moveable facilities; dust scattering and dispersing designed to be coupled or trailed to tractors;
8424 81	Pneumatic elevators and conveyers specially intended for agricultural usage
8428203000	Loading equipment specially designed to be coupled to agricultural tractors
8428 90 710 0	Machines used in agriculture, gardening and forestry for land processing (except for rollers for cleaning lawns and sports grounds, classified in goods position 8432 80 000 0)
8432	Machines and mechanisms for gathering and beating
8433 20	agricultural plants, pressing devices, including presses for packing dry grass and hay in bales; grass and lawn mowing machines; machines for cleaning, sorting and calibrating eggs, fruits and other agricultural products, besides those listed under code 8437
8433 30	Milking facilities and devices, equipment for milk processing and reprocessing
8433 40	Equipment for agriculture, gardening, forestry, poultry farming, beekeeping and others together with mechanical and heating
8433510000	
8433 520000	
8433 53	
8433 59	
8433 600000	
8433 900000	
8434	
8436	

8437	devices, including equipment for growing seeds;
8438	incubators and brooders for poultry farming
	Machines for cleaning, sorting and calibrating seeds, wheat and bean plants, equipment used in farms for flour milling industry and for processing wheat and dry beans, except for the equipment used in agricultural farm
	Equipment which is not enumerated and classified in other parts of this group and which is used for production and manufacture of food products and drinks, except for equipment for extraction and production of animal or non-evaporable plant oil or fat.

APPENDIX 7

Translation of the Letter from the MoA to Agro Lider

THE MINISTRY OF AGRICULTURE OF AZERBAIJAN REPUBLIC

To Mr. Saleh Guliyev

Chairman of "Agrolider" LLC

Dear Mr. Saleh,

We'd like to inform you that "Agrolider" LLC (with different name before) has been operating under your leadership for more than 10 years. During this period the company has been provided with all opportunities for normal operation. As semen wasn't produced in the country the Department of Insemination, Production and Processing of Animal Products and Pastures of the Ministry of Agriculture engaged all AI (Artificial Insemination) technicians to purchase semen from "Agrolider" LLC before.

On October 1st, 2010 an independent Artificial Insemination Center started its activity in our country. Our republic already produces semen.

Semen is produced from 21 bulls imported to the Center from Germany, Austria, Russia and Iran. There is no need for us to buy semen from Russia, Turkey and Iran.

We seek financial assistance worth to provide 28 employees of the center with monthly salary, to buy chemical preservatives, liquid nitrogen and equipments in order to package semen and feed for 40 heads of cattle (19 of them are cows, heifers and others). It requires at least 460 thousand AZN every year to solve all these issues.

Accordingly, all AI technicians trained by the Ministry of Agriculture through public financing should buy semen from the Artificial Insemination Center.

We are not dissatisfied with Elvin Guliyev who is engaged in the sale of semen imported from the Netherlands but he doesn't want to accept the simple truth. We have repeatedly told him that the company can sell semen made in the Netherlands only to 20 technicians working in Absheron, Goychay and Ismayilli.

But Elvin Guliev keeps selling semen to other AI technicians and it causes problems.

We'd like to say that every year provide information for the Presidential Administration, the Cabinet of Ministers and The Ministry of Economic Development about the number of cattle inseminated by the technicians. It is important that you provide the Ministry with the

information about the doses of semen which AI technicians bought from “Agrolider” LLC in 2010 to identify the accuracy of all the values specified in the reports submitted to the Ministry by the technicians.

All of us should adhere to the Laws of Azerbaijan Republic. We’d like to remind you that according to Article 21.6 of the Law of Azerbaijan Republic on “Pedigree Cattle Breeding” the artificial insemination of cattle shall not be realized without the permission of the Ministry of Agriculture.

Considering all of the above-mentioned we kindly ask you to ensure that the technicians should provide the Ministry with the information about the doses of semen they bought in 2010 in the shortest period of time.

With Best Regards

Chingiz Faracov

Head of the Department of Insemination,

Production and Processing of Animal Products and Pastures

APPENDIX 8

Itinerary

Itinerary J. Bonnier

Date	Overnight	Activity
Stay		
12/2		Travel Almere-Baku
13/2	Baku	Arrival at 01.30, Sunday
14/2	Baku	ACT Office, program planning and information
15/2	Baku	UMID, Agroleasing, AIM
16/2	Baku	B-Agro, data collection & analysis
17/2	Agjabedi	Atena dairy Plant, Feed & Soil Lab
18/2	Baku	AIM office, farms, MCC, cattle market
19/2	Baku	Market research, office work
20/2	Baku	Sunday, official day off, Cred Agro
21/2	Baku	MoA, reporting and data analysis
22/2	Lankaran	MCC Saatli
23/2	Lankaran	Pal Sud, MCC Boladi, milk collector, farms
24/2	Baku	Market research, farm visits
25/2	Baku	Paper on Business Development for Keith Simmons
26/2	Baku	Agro Lider, Action Plan, Sector Overview paper
27/2	Baku	Sunday, official day-off, Cred Agro
28/2	Baku	USAID meeting on Investment Summit, presentation
01/3	Baku	M-Pro, Azersun, Action Plan internal presentation
02/3	Baku	Office work, Dutch Ambassador, Investment Summit
03/3	Baku	Presentation Action Plan at USAID, AI field work, IFAD
04/3	Baku	Data analysis, market research
05/3	Baku	ACT office, report writing

06/3 Travel Baku-Almere

8/3 - 18/3 Report writing in the Netherlands